R Darbey

# MYOGRAPHIÆ COMPARATÆ SPECIMEN:

## OR, A COMPARATIVE DESCRIPTION OF ALL THE MUSCLES IN A MAN, and in a QUADRUPED.

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By JAMES DOUGLAS, M.D.

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A New Edition, with Improvements.

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To which is now added,

An ACCOUNT of the BLOOD VESSELS and NERVES.

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# ADVERTISEMENT.

THO' Dr. Douglas's Comparative Myography has been publiſhed about half a century, yet ſtill it is allowed to be one of the beſt books on the ſubject: witneſs the character given of it by an unexceptionable judge in a very late work; Egregius labor, etſi juventutis opus --- inter compendia excellit *.

'This edition is carefully printed from that which the author publiſhed in the year 1707. But the cor-

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* Vide HALLER. Comment. in Boerhaav. method. ſtud.

rections and additions to the deſcription of ſeveral muſcles, which he afterwards printed in an appendix, are here inſerted in their proper places; and for the benefit of young anatomiſts, the ſynonimous names of the muſcles, together with a few notes, are added at the foot of the page.

For their uſe, we have likewiſe added from ALBINUS's Hiſtoria Muſculorum, the order in which the muſcles may be moſt conveniently diſſected in one ſubject; and a liſt of them, according to their ſituation in the different regions of the body.

*THE*

# THE

# PREFACE.

*THO' Myography has been often cultivated by induſtrious and good hands, yet it ſtill affords a fertile field of reformation and improvement: of this, it is preſumed, this ſmall treatiſe will be ſufficient evidence. Not that I lay claim to the vain preſumption of having corrected all the miſtakes, and ſupplied all the defects of thoſe who have wrote upon this ſubject; that I leave to finiſhing hands.*

*I queſtion not, but that I may be liable to correction in many things; or at leaſt, that a better and more dexterous hand may rectify ſome of my deſcriptions.*

*The encouragement I had to publiſh theſe deſcriptions, was, that I took them all from the life; I mean, from ocular inſpection in diſſection; without taking any of them upon the credit of another. For* *beſore I was determined, as to the origin, progreſs, and inſertion of the muſcles, I raiſed them on both ſides of above twelve ſubjects, both fœtus's and adults; ſtill committing to paper what I obſerved. I read often, and carefully peruſed all the authors that have wrote upon the muſcles, from the immortal Galen down to this time; and after comparing all the deſcriptions one with another, I ſingled out ſuch as I found conformable to the life; that being the ſtandard I always go by; and according as that directed me, I have here rectified what I humbly conceived to be their miſtakes, (but without mentioning them as their's) and ſupplied their defects as far as my obſervation went.*

*If any one has a mind to cenſure theſe deſcriptions as falſe, I only beg leave to acquaint him before hand, that I will always appeal to the ocular inſpection of ſubjects, and if that gives it againſt me, I ſhall willingly retract and acknowledge my error. Whatever is offered againſt them, that is not accompanied with that. I ſhall pay but little regard to it. And to juſtify, in ſome meaſure, the conformity of theſe deſcriptions to exact obſervation and matter of fact, I ſtill keep by me the half of one of my ſubjects, artfully prepared, which will afford me means of demonſtration when a freſh ſubject is not at hand.*

And here I cannot but take notice, that in the many bodies I have viewed, I have not met with that frequency of Luſus Naturæ, that is ſo commonly talked of, eſpecially by thoſe who are loth to take the pains to make a ſtrict and narrow inquiry in the diſſection of theſe uſeful machines of motion. 'Tis true indeed, that nature does ſometimes ſport and vary in the compoſition of a muſcle. Thus I have obſerved two Palmares in one hand; I have found three heads to the Biceps Cubiti, the uncommon head ariſing from the middle of the Os Humeri; I have ſeen one of the Interoſſei come from the upper part of the Carpus externally, &c. The other inſtances I could adduce, I refer to another occaſion.

As for the comparative part of this treatiſe, or the interlacing the deſcriptions of the human muſcles with thoſe of the canine, that I preſume needs no apology. The many uſeful diſcoveries drawn from the diſſection of quadrupeds, the knowledge of the true ſtructure of divers parts of the body, of the courſe of the blood and chyle, and of the uſe and proper action of the parts that is chiefly owing to this ſort of diſſection: theſe, I ſay, give a warrantable plea for inſiſting upon it, though it may be cenſured by the vulgar.

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*As for what relates particularly to the muſcles of a Dog, or that quadruped which I have choſe for my ſubject, I was induced to make the parallel between thoſe of a man, and thoſe of that animal, by two reaſons.*

*1. One is the opportunity of ſhewing the contrivance and uſe of the muſcles ſubſervient to the peculiar motions of a dog, and ſuch as its different way of living did neceſſarily require.*

*For where Nature has acted uniformly, I am ſilent; and that indeed is frequently met with, there being an exact ſimilitude between the make and ſtructure of many of the muſcles of a man, and that of the correſponding muſcles in a dog: but where any difference appears in reſpect of origin or inſertion, it is there (and there only) that my comparative remarks take place.*

*2. The other reaſon is taken from the benefit and conveniency of the young ſtudents of anatomy, who may readily procure ſo common a ſubject; and if they once acquire a dexterity of raiſing the muſcles in it, may promiſe themſelves an equal ability in raiſing thoſe of the human body, after the diſſection of one, or two at moſt.*

Galen, the great head of the anatomical ſchool, both practiſed himſelf, and recommended to his ſcholars, the frequent diſſection of monkeys and apes, as highly conducive to a more perfect knowledge of the admirable ſtructure of the organs of the human body. I do not affirm, as ſome would have it, that he never diſſected any thing elſe: for not to mention the many other reaſons that might be offered to the contrary, the very deſcriptions he gives of ſeveral muſcles ſuit only to the human body, and differ from all the quadrupedes; but becauſe that ever renowned author has left us on record an account of the muſcles in an ape, as well as in a man, I deſire the reader to remark, That the deſcriptions of the muſcles in his Adminiſtrationes Anatomicæ, and in his book, De Diſſectione Muſculorum, are chiefly taken from apes: but the account we have of them in his admirable book De Uſu Partium, are all taken from men. 'Tis pity the great Veſalius did not conſider this.

The method I have here obſerved, is the ſame with that made uſe of at Surgeons-hall, in this city, the moſt noted and moſt illuſtrious ſchool of anatomy now in Europe. As ſo weighty an authority was more than ſufficient to determine my choice, ſo I cannot but ſay, that it ſeems to be the beſt accommodated to the *capacity of young ſtudents, and to be concerted in the moſt eaſy and diſtinct way.*

*I have purpoſely omitted the anatomical adminiſtration, or the manner of raiſing the muſcles, upon the conſideration, that it would have inlarged the bulk of this treatiſe, which is deſigned for a manual, fit to be carried about to publick diſſections, and would have increaſed its price, without doing the young ſtudent any additional ſervice; it being impoſſible to make any an operator in this way by oral precepts; manual operation, and the ſeeing one diſſect, are the only effectual means for the compaſſing that end.*

*This comparative ſurvey I deſign to continue thro' all the ſix parts, into which the human body is anatomically divided: the ſpecimen now offered upon the muſcles being what I had firſt drawn up, and withal a not improper fore-runner to the remaining parts.*

*It remains now to acquaint the reader, that all the muſcles diſcovered or deſcribed by the immortal Galen, ſtand here without any name or mark affixed: thoſe diſcovered ſince have the names of their reſpective diſcoverers joined to them: and thoſe, which I humbly conceive, to have lain hitherto undiſcovered, and have been brought to light by my aſſiduous appli-*

*cation to this part of anatomy, without any aſſiſtance from other men or books, have three ſtars ſet after their names. Though I have joined the diſcoverer's name to the title or denomination of the muſcle, yet I take the liberty to give my own deſcriptions, without mentioning in what particular point it is that I depart from them. Indeed, where I find the deſcriptions agreeable to the life, or to what obſervation I have been able to make, I have kept to them, and particularly in a great many given by the juſtly celebrated Mr. Cowper, whoſe very words I have often uſed, it being impoſſible to find others with more juſtice to the ſubject. And to the ſame moſt accurate and indefatigable improver of anatomy am I obliged for the uſes of moſt of the muſcles, both human and canine. From the labour and induſtry of this worthy perſon, who is equally famous for his wonderful dexterity in diſſecting, and great ſkill in deſigning, we are now daily expecting a compleat account and hiſtory of the human muſcles, enriched with abundance of improvements and new diſcoveries, and illuſtrated with original figures, being all done from the life, by his own hand.*

*I have ſubjoined to this treatiſe an Etymological Table of the muſcles, the frequent reading, and attentive conſideration of which, will render eaſy and familiar*

*familiar the harſh and not eaſily remembered names of many of theſe inſtruments of motion.*

*I have induſtriouſly avoided the common fault of multiplying muſcles without neceſſity. For example: I have deſcribed the Extenſors of the cubit as one muſcle; the Gaſtrocnæmius and Solæus I make but one muſcle, ariſing by four heads; the oblique and tranſverſe muſcles of the Abdomen, in my opinion, make only three muſcles, and not ſo many pairs. Indeed I make four muſcles of the Triceps Femoris, becauſe it has ſo many diſtinct beginnings and endings, as may be ſeen in the hiſtory of the muſcles itſelf, to which I haſten.*

## THE

# INTRODUCTION.

BEFORE I deſcend to the deſcription of each muſcle in particular, I think it requiſite, for the benefit of young beginners, to give a ſhort account of their ſtructure and compoſition in general; and, by way of introduction to that, to premiſe what is meant by a Fibre and a Membrane; the whole being only an abridgment of what is found in authors, who treat of that ſubject at large.

A Fibre is called in Greek ἶς, in Latin Fibra, which properly ſignifies thoſe Villi or ſtrings that hang about the roots of plants; but in an anatomical ſenſe, it may be deſcribed a ſubſtance, in figure like a fine thread, of a tenſible and irritable nature; by the various texture and combination of which, all the ſolid parts of the human body are framed.

Of theſe fibres there are divers kinds, for ſome are membranous, ſome carnous, ſome cartilaginous, ſome oſſeous, and ſome nervous; but theſe three laſt mentioned belong to another place, whither I refer them. The carnous fibres are vaſcular and hollow, being full of little cells; they are called *Fibræ motrices*, inaſmuch as they are the chief organs of muſcular motion. But of theſe, and the other membranous and tendinous fibres, more hereafter.

The difference of theſe fibres may be likewiſe taken from their ſituation or courſe, with reference to which they are called ſtraight, as running lengthways, or in right lines; circular, as running round ſome part, thoſe for inſtance, of the Sphincter muſcles; tranſverſe, which interſect the ſtraight ones at different angles; or oblique, which cut both the ſtraight and tranſverſe at unequal angles.

A Membrane is a broad, thin, white, dilatable ſubſtance, interwoven with ſeveral ſorts of fibres, like a web.

It is called in Greek ὑμὴν, χιτὼν, and μενίγξ, all which appellations, in the works of Hippocrates and Galen, denote one and the ſame thing, being by them indifferently uſed: but later writers have appropriated them to particular membranes; thus Hymen is only given to that circular fold of the inner coat of the Vagina Uteri, placed near its outer orifice; Menynx is only attributed to the membranes that involve the brain; χιτὼν ſtill denotes a membrane or coat. Now in Engliſh, a membrane, taken in a large ſenſe, comprehends all the Tegumenta or coverings that inveſt the ſolid, or contain the fluid parts; and theſe too have their particular names, according to the different parts they envelope. Thus the membrane that covers the Cranium, or ſkull, is called Pericranium; that which lines the inſide of the Thorax, Pleura; that which inveſts the Abdomen, Peritonæum; the membrane which firmly adheres to the ſurface of all the bones, Perioſtium. Beſides, that the membranes of ſome particular parts have alſo particular names, as we may ſee in their hiſtory. The membranes which form the coat of membranous bodies, ſuch as the ſtomach, guts, &c. or the membranes of the veſſels, containing the humours, are properly ſtiled coats and veſſels.

All the membranous fibres have a ſort of elaſticity or ſpring, whereby, upon occaſion, they can very eaſily extend, and contract themſelves again, as may be obſerved in the Peritonæum, ſtomach and Uterus. The nervous filaments interlaced between them, and pouring in the animal ſpirits, make them extremely ſenſible whence the ancients were led into a miſtake in affirming, that the membranes were the true organs of feeling.

Every membrane, though it appears never ſo thin, yet is manifeſtly double, and between the duplicature the veſſels run. And in the tiſſure of their inner membrane there are placed abundance of ſmall glands, which ſeparate an humour for moiſtening them, and thereby hinder preternatural adheſions to the parts they touch, which always happens to any of the Viſcera, affected with a Scirrus, or hard tumor, which, in ſuch a caſe, adheres firmly to all the neighbouring parts.

The uſe of the membranes is to wrap up, and cover the parts, to ſtrengthen them, to defend ſeveral of them from being hurt by the ſubjacent bones, to ſuſtain the veſſels that are ramified upon them, to keep the parts united; and it is worth our obſervation, that the admirable ſympathy, or conſent of the parts one with another, depends, in a great meaſure, upon their fibrous connexions.

All that ſoft part of the body, the vulgar call fleſh, is by anatomiſts diſtinguiſhed into various parts or parcels, which they name ſo many muſcles.

A Muſcle is nothing but a Faſciculus, or bundle of fleſhy and tendinous fibres, incloſed in a proper membrane, by means of which all the motions in an animal body are performed.

It is called μῦς by the Greeks, (which word properly ſignifies Mus, a mouſe) and that perhaps from the likeneſs ſome of them have to that animal when ſtript of its ſkin; but others, with more reaſon, derive it from μυεὶν, contrahere, which is the proper action of a muſcle.

The whole body of the muſcle is commonly diſtinguiſhed into three parts, viz. the head or beginning, the body or belly, and the tail or ending; or into the middle, and the two extremities.

The head is that part of the muſcle which ariſes from the moſt ſtable part, unto which the contraction is made; for it is a conſtant rule, that every muſcle is moved towards its beginning, which thence may be called the centre of its motion.

The origin of a muſcle is, for the moſt part, tendineo-carnous; ſometimes it is entirely tendinous, and ſometimes it is obſerved to be only fleſhy.

The tail, or end of a muſcle, is that part of it which is implanted or inſerted into the member which is to be moved. This extremity is commonly called its tendon, or Tendo in Latin, yet Fallopius gives it often the name of Chorda; the Greeks call it ἀπονεύρωσις; but at preſent, by this word is only meant a thin, tendinous expanſion, or membrane-like dilatation, ſent off from the tendon of a muſcle, as that of the Biceps Cubiti, Semi-tendinoſus Tibiæ, &c.

The ſubſtance of a tendon is the very ſame with that of the reſt of the muſcle; only its fibres being cloſely compacted together, for the conveniency perhaps of having a greater number of them inſerted into a narrow place, they feel harder, and appear of a whiter colour; ſo that the fleſhy fibres of a muſcle are only its tendon divided and looſe; and the tendon is nothing but thoſe very fibres cloſely united, as Spigelius has moſt elegantly expreſſed it.

It is very probable, that every ſingle muſcle either begins or ends tendinous, (with this difference, that ſome few of them end in the Periostium, though the greateſt part do penetrate that membrane, and are immediately inſerted into the bone) the ſtronger and more conſpicuous being extended beyond the fleſhy part; the ſlender, and not ſo diſcernible, lie either hid under the fleſh, or they are interlaced between its fibres.

It is neceſſary to know, that the head and tail of a muſcle are terms convertible; for according to the different ſituation of the body, thoſe extremities do ſo alter, that the part which was before immoveable and fixed, becomes moveable.

The belly of a muſcle is the middle part of it, which conſiſts of fleſhy fibres, red, lax, and ſpongeous, as may be diſtinctly obſerved in a piece of parboiled fleſh. Now each fibre is made up of a vaſt number of little Fibrillæ, which are ſo many very ſlender hollow pipes, bound about by ſmall tranſverſe parallel threads, which divide theſe hollow fibrils into a great many Veſiculæ, or cells, that have no communication one with another, but only afford a place of entertainment for the blood and ſpirits in the action of the muſcle. This red colour of the fleſhy fibres is only owing to the blood they receive; for upon injecting warm water plentifully into the arteries, the redneſs abates, and the fibres put on the ſame colour with theſe diſtractile tubes.

The proper conſtituent parts of a muſcle are thoſe already deſcribed.

The common are arteries, veins, nerves, lymphæducts and fat. The arteries import the blood, and the veins convey it back again to the heart; the nerves bring animal ſpirits upon any impreſſion communicated to them from the mind; the Lymphæducts, perhaps, carry back the remains of the nouriſhing juice, to be refunded into the venal maſs; the fat that is lodged upon and between the fibres, ſerves to lubricate and render them more fit for action.

A muſcle is either ſingle or compound. In the firſt all the fleſhy fibres run parallel to one another, or in the ſame direction; in the latter they run in ſeveral planes croſſing one another, or in different courſes.

All muſcles, which ſerve for the ſame motion, are called Congerentes, becauſe they aſſiſt one another in their action; and thoſe, which are the inſtruments of oppoſite motions, are named Antagoniſtæ; as for example: every Flexor, or bending muſcle, has a Tenſor, or extending muſcle; and it is a conſtant obſervation, that when one of theſe muſcles is ſhortened, the other is extended; for the ſhortening of the muſcle which acts, muſt needs produce an extenſion of its antagoniſt, or of that which acteth not.

The uſe or action of the muſcles is to perform all the different motions of the parts, and that is done by contracting themſelves; for when the Fibrillæ Motrices are ſhortened, the moveable part muſt of neceſſity be drawn towards the fixed; or the part from which the muſcle does ſpring, and that into which it is inſerted, muſt needs be brought nearer each other. But after what particular manner this is tranſacted, I ſhall not at preſent enquire, but refer my inquiſitive reader, who delights in ſuch ſpeculations, to the authors who handle that ſubject, where their various conjectures may be ſeen at large; which, in truth, I am litle fond of tranſcribing. The account of muſcular motion, given by the great Bernouillius, late phyſician at Baſil, ſeems to be the moſt natural, and th moſt agreeable to the rules of mechaniſm, o any that has been hitherto advanced ; and to repair the loſs that we lie under, of not meetin readily with that incomparable treatiſe, the world will ſpeedily ſee a correct edition of it, with large improvements from Dr. Mead, whoſe diſtinguiſhing capacity in the way of phyſic and learning, is accompanied with a candor and goodneſs that affects all who know him.

The differences of the muſcles, being moſtly taken from the very ſame things whence their names are derived, to avoid all needleſs repetitions, I ſhall refer to the Etymological Table, and proceed.

THE

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An

# An Alphabetical Table of the Parts with the Names and Number of Muſcles belonging to each.

Muſculi Abdominis, V.

*Obliquus aſcendens.*

*—— deſcendens.*

*Pyramidalis.*

*Rectus.*

*Tranſverſalis.*

Muſculi Ani, III.

*Levator major, ſeu internus.*

*Levator minor, ſeu externus.*

*Sphincter.*

Muſculi Auriculæ, II.

*Communes.*

*Proprii.*

Muſculi Auris internæ, IV.

*Externus Auris.*

*Internus Auris.*

*Muſculus Stapedis.*

*Obliquus.*

Muſculi Capitis, XII.

*Caput concutiens.*

*Complexus.*

*Obliquus inferior.*

*—— ſuperior.*

*Rectus internus major.*

*—— —— minor.*

*—— lateralis.*

*—— major.*

*—— minor.*

*Splenius.*

*Sterno-maſtoidæus.*

*Trachelo-maſtoidæus.*

Muſculi Carpi, IV.

*Extenſor Carpi Radialis.*

*—— —— Ulnaris.*

*Flexor Carpi Radialis.*

*—— —— Ulnaris.*

Muſculus Coccygis, I.

*Coccygæus.*

Muſculi Colli, VI.

*Inter-ſpinales.*

*Inter-tranſverſales.*

*Inter-vertebrales.*

*Longus.*

*Spinalis.*

*Tranſverſalis.*

Muſculi Cubiti, V.
*Anconæus.*
*Biceps externus.*
*—— internus.*
*Brachialis externus.*
*——— internus.*

Muſculi quatuor Digitorum Manûs, IV.
*Extenſor Digitorum communis.*
*Flexor profundus.*
*Interoſſei.*
*Lumbricales.*

Muſculi quatuor Digitorum Pedis, VI.
*Extenſor brevis.*
*——— longus.*
*Flexor profundus.*
*—— ſublimis.*
*Interoſſei.*
*Lumbricales.*

*N. B. Muſculi Pollicis, Indicis & minimi Digiti, vid. Ord. Alphabet.*

Muſculi Dorſi, III.
*Longiſſimus.*
*Semi-ſpinalis.*
*Tranſverſales.*

Muſculi Femoris, XII.
*Abductores.*
*Gemini.*
*Glutæus major.*
*——— medius.*
*——— minor.*
*Iliacus externus.*
*—— internus.*
*Obturator externus.*
*——— internus.*
*Pectinalis.*
*Pſoas magnus.*
*Quadratus.*

Muſculi Cutis Frontis & Occipitis, II.
*Muſculus Frontalis verus, ſeu Corrugator Coiteri.*
*Occipito-frontalis.*

Muſculi Genæ, II.
*Buccinator.*
*Quadratus.*

Muſculi Humeri, IX.
*Coraco-brachialis.*
*Deltoides.*
*Infra-ſpinatus.*
*Latiſſimus Dorſi.*
*Pectoralis.*
*Sub-ſcapularis.*
*Supra-ſpinatus.*

*Teres major.*
*—— minor.*

### Muſculi Oſſis Hyoidis, VI.

*Coraco-hyoidæus.*
*Genio-hyoidæus.*
*Mylo-hyoidæus.*
*Sterno-hyoidæus.*
*Stylo-chondro-hyoidæus.*
*Stylo-hyoidæus.*

### Muſculi Indicis, III.

*Abductor Indicis.*
*Extenſor ſecundi Internodii Indicis proprius.*
*Extenſor tertii Internodii Indicis.*

### Muſculi Labiorum, VIII.

*Depreſſor Labii inferioris proprius.*
*Depreſſor Labii ſuperioris proprius.*
*Depreſſor Labiorum communis.*
*Elevator Labii inferioris proprius.*
*Elevator Labii ſuperioris proprius.*
*Elevator Labiorum communis.*
*Sphincter Labiorum.*
*Zygomaticus.*

### Muſculus Laryngis, VIII.

*Arytenoidæus major.*
*———— minor.*
*Crico-arytenoidæus lateralis.*
*Crico arytenoidæus poſticus.*
*Crico thyreoidæus.*
*Hyo-thyreoidæus.*
*Sterno-thyreoidæus.*
*Thyreo-arytenoidæus.*

### Muſculi Linguæ, IV.

*Cerato-gloſſus.*
*Genio-gloſſus.*
*Lingualis.*
*Stylo-gloſſus.*

### Muſculi Lumborum, V.

*Inter-tranſverſales.*
*Pſoas parvus.*
*Quadratus.*
*Spinalis.*
*Tranſverſalis, ſeu ſacer.*

### Muſculi Mallei,

*Vid. Muſculi Aur. intern.*

### Muſculi Maxillæ inferioris, V.

*Digaſtricus.*

*Maſſeter.*
*Pterigoidæus externus.*
*———— internus.*
*Temporalis.*
Muſculus meatus Auditorii, I.
*Muſculus meatus Auditorii novus.*
Muſculi minimi Digiti Manûs, III.
*Abductor minimi Digiti.*
*Extenſor tertii Internodii minimi Digiti.*
*Flexor primi Internodii minimi Digiti.*
Muſculi minimi Digiti Pedis, II.
*Abductor.*
*Flexor primi Internodii minimi Digiti.*
Muſculus Naſi, I.
*Rinæus vel Naſalis.*
Muſculi cutis Occipitis,
*Vid. Muſc. cutis Frontis,*
Muſculi Oculi, VI.
*Abductor.*
*Adductor.*
*Depreſſor.*
*Elevator.*
*Obliquus inferior.*
*Obliquus ſuperior.*
Muſculi Palmæ Manûs, II.
*Palmaris brevis.*
*——— longus.*
Muſculi Palpebræ, II.
*Aperiens Palpebram rectus.*
*Orbicularis Palpebrarum.*
Muſculi Penis, II.
*Accelerator Urinæ.*
*Erector Penis.*
Muſculi Pharyngis, XII.
*Pharyngæus, whoſe various orders of fibres are named as follows:*
*Cephalo-pharyngæus.*
*Chondro pharyngæus.*
*Crico-pharyngæus.*
*Gloſſo-pharyngæus.*
*Hyo-pharyngæus.*
*Mylo-pharyngæus.*
*Pterigo-pharyngæus.*
*Salpingo-pharyngæus.*
*Stylo-pharyngæus.*
*Syndeſmo-pharyngæus.*
*Thyreo-pharyngæus.*
Muſculi Pollicis Manûs, IX.
*Abductor.*

*Adductor ad Indicem*
——— — *minimum digitum.*
*Extenſor primi Internodii.*
——— *ſecundi.*
——— *tertii.*
*Flexor primi Internodii.*
—— *ſecundi.*
—— *tertii.*

### Muſculi Pollicis Pedis, VI.

*Abductor.*
*Adductor.*
*Extenſor brevis.*
—— *longus.*
*Flexor brevis.*
—— *longus.*

### Muſculi Radii, IV.

*Pronator quadratus.*
——— *teres.*
*Supinator brevis.*
——— *longus.*

### Muſculus Stapedis,

*Vid. Muſc. Aur. intern.*

### Muſculi Scapulæ, III.

*Levator Scapulæ.*
*Rhomboides.*
*Trapezius.*

### Muſculi Tarſi, VI.

*Extenſor Tarſi Suralis, vulgò Gaſtrocnæmius, & Solæus.*
*Extenſor Tarſi minor, vulgò Plantaris.*
*Peronæus primus.*
——— *ſecundus.*
*Tibialis anticus.*
—— *poſticus.*

### Muſculi Teſtium, II.

*Cremaſter..*
*Dartos.*

### Muſculi Thoracis, XIII.

*Cervicalis aſcendens.*
*Coſtarum depreſſores.*
——— *levatores.*
*Diaphragma.*
*Intercoſtales.*
*Sacro-lumbalis.*
*Scalenus.*
*Serratus inferior poſticus.*
*Serratus major anticus.*
——— *minor anticus.*
——— *ſuperior poſticus.*
*Subclavius.*
*Triangularis.*

### Muſculi Tibiæ, XI.

*Biceps.*
*Cruræus.*
*Gracilis.*

*Membranoſus.*
*Poplitæus.*
*Rectus.*
*Sartorius.*
*Semi-membranoſus.*
*Semi-nervoſus.*
*Vaſtus externus.*
—— *internus.*

Muſculus Tubæ Euſtachianæ.

Muſculus Tubæ novus, vel Palato-ſalpingæus.

Muſculi Veſicæ, II.

*Detruſor Urinæ.*
*Sphincter Veſicæ.*

Muſculi Uvulæ, IV.

*Gloſſo-ſtaphilinus.*
*Palato ſtaphilinus.*
*Salpingo-ſtaphilinus.*
*Thyreo-ſtaphilinus.*

An

# An EXPLICATION of the ABBREVIATED NAMES of the AUTHORS quoted in this Treatiſe, with the Title of their Works to which theſe Quotations refer, and the Names of the MUSCLES each of them have diſcovered.

AQUAPENDENT. *Hieronimus Fabritius ab Aquapendente, in his Treatiſe de Auditu, Patavii,* 1600, *deſcribes the Muſculus externus Auris.*

COITER. *Volcherus Coiter, in his externarum & internarum principalium humanis Corporis Partium, Tabulæ atque anatomicæ Exercitationes Obſervationeſque variæ, Norimbergæ,* 1573, *deſcribes the Corrugator.*

COWP. *Wm. Cowper, in his Myotomia reformata, or a new Adminiſtration of all the Muſcles of human Bodies, London,* 1694, *deſcribes the*
*Elevator Labii inferioris proprius,*
*Depreſſor Labii ſuperioris proprius,*
*Pterigo-pharyngæus,*
*Rectus internus minor,*
*Inter-*

*Interſpinales,*
*Spinalis Lumborum,*
*Extenſor Pollicis Pedis brevis,*
*Flexor primi Internodii minimi Digiti.*

*His Diſcovery of the Coſtarum Depreſſores he was ſo kind as to communicate unto me.*

DIEMERBR. *Iſbrandus de Diemerbroeck, in his Anatome Corporis humani. Ultrajecti,* 1672. *deſcribes the*
*Cervicalis deſcendens.*

DUVERN. *Joſephus du Verny, in his Tractatus de Organo Auditûs, continens Structuram, Uſum, & Morbos omnium Auris Partium. Norimbergæ,* 1684, *deſcribes the*
*Muſculus Auris externus,*
*Muſculus Stapedis.*

EUSTACH. *Bartholomæus Euſtachius, in his Treatiſe de Auditûs Organis, printed with his Opuſcula anatomica Venetiis,* 1563, *deſcribes the*
*Muſculus Auris internus.*

FALLOP. *Gabriel Fallopius, in his Obſervationes anatomicæ, Venetiis,* 1562, *deſcribes the*
*Pyramidalis Abdominis,*
*Aperiens Palpebram rectus,*
*Mylo-hyoidæus,*
*Rectus lateralis,*
*Pterigoidæus externus,*
*Capitis par tertium,*
*Erector Clitoridis.*

GALEN. *Claudius Galenus deſcribes all the Muſcles mentioned in this Specimen, that have neither a Name nor*

*nor a Mark affixed to them, in his incomparable Treatiſes, de Diſſectione Muſculorum ad Tyrones, de anatomicis Adminiſtrationibus, and de Uſu Partium Corporis humani.*

Ja. Sylv. *Jacobus Sylvius, in his Opera medica, Coloniæ Allobrogum,* 1630, *deſcribes the*
*Maſſa carnea, ſeu Muſculoſæ Carnis Portio.*

J. Bapt. Canan. *Johannes Baptiſta Cananus, in his Muſculorum humani Corporis picturata Diſſectio Ferrariæ,* 1572, *deſcribes the*
*Palmaris brevis.*

Jul. Cass. Plac. *Julius Caſſerius Placentinus, in his de Vocis Audituſque Organis Hiſtoria anatomica. Ferrariæ* 1600, *deſcribes the Externus Auris,*
*and in his Tabulæ anatomicæ, publiſhed by Daniel Bucretius, he deſcribes the*
*Tranſverſalis Pedis.*

Riol. *Johannes Riolanus, in his Anthropographia, Pariſiis* 1649, *deſcribes the*
*Levator Ani externus,*
*Pſoas parvus,*
*Anconæus,*
*Hypothenar,*
*Thenar.*

Spig. *Adrianus Spigelius, in his Fabrica Corporis humani ex Recentione Joh. Antonid. vander Linden, Amſtelodami* 1645, *deſcribes the Lingualis.*

Sten. *Nicolaus Steno, in his de Muſculis & Glandulis*

*Glandulis Obſervationum Specimen, Haſniæ,* 1667, *deſcribes the*
*Coſtarum Levatores,*
*Muſculi ad Sacrolumbum acceſſorii.*

VALSALV. *Antonius Maria Valſalva, in his late Treatiſe de Aure humana, Bononiæ* 1704, *deſcribes the*
*Crico-pharyngæus,*
*Gloſſo-pharyngæus,*
*Hyo-pharyngæus,*
*Thyreo-pharyngæus,*
*Gloſſo-ſtaphilinus,*
*Salpingo-ſtaphilinus,*
*Muſculus Tubæ novus.*

VESAL. *Andreas Veſalius in his humani Corporis Fabrica, Baſiliæ* 1543, *deſcribes the*
*Par nonum Pedis.*

*The following Muſcles, which have this Mark* * * * *affixed to their Names, were diſcovered by the Author in his late Application to Myotomy.*
*Muſculus meatus Auditorii,*
*Stylo-chondro-hyoidæus,*
*Chondro-pharyngæus,*
*Mylo-pharyngæus,*
*Salpingo-pharyngæus,*
*Syndeſmo-pharyngæus,*
*Palato-ſtaphilinus,*
*Thyreo-ſtaphilinus,*
*Inter-tranſverſales Colli,*
*Inter-vertebrales Colli,*
*Inter-tranſverſales Lumborum,*
*Coccygæus,*
*Duo Muſculi Vaginæ Uteri.*

# MYOGRAPHIA:
## OR, A
## DESCRIPTION
## OF THE
# MUSCLES.

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## CHAP. I.

## Of the muſcles of the Abdomen.

### Obliquus Descendens *

ARISES by ſeveral tendons, that next the Vertebræ Dorſi being longer than any of the reſt, from the lower edge of the 5th, 6th, 7th, 8th, 9th, 10th and 11th rib, a little before they become cartilaginous; from the cartilaginous extremity of the 12th rib; and tendineo-carnous

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* Obliquus externus. Winſlow and Albin.

from all the outſide of the ſame ribs near their cartilages. Its four uppermoſt acute beginnings are intermixed with the terminating Digituli of the Serratus Anticus major upon the body of the rib, and all the reſt adhere to the Latiſſimus Dorſi, at its origin from the ribs.

Inſertion. Is inſerted fleſhy into the outer lip of more than one half of the Os Ilium, tendinous into the fore part of the ſame bone, and into the Peritonæum, and by two tendons into the Os Pubis; and beſides into all the Linea alba, and lower part of the Os Pectoris, by a broad membranous tendon.

Uſe. Its uſe is to compreſs all the Viſcera contained in the Abdomen, to pull the ribs down in expiration, and to turn the trunk of the body to one ſide.

N. B. Before you can raiſe this muſcle, you muſt free part of the Latiſſimus Dorſi from its adheſion to the Os Ilium, and then you will have a view of the Obliquus internus, the Triangularis Lumborum, the tendon of the

Tranſverſalis Abdominis and the Sacrolumbalis.

*In a dog it ariſes from the ten inferior ribs, and membranous from the top of the ſpines of the four upper Vertebræ of the loins.*

OBLIQUUS ASCENDENS *

Origin. ARISES tendinous from the poſterior part of the ſpine of the Os Ilium, fleſhy from the reſt of the circular edge of that bone, tendinous again from the Peritonæum, and from the middle and fore part of the Os Pubis.

Inſertion. Is inſerted fleſhy into the lower edge of the laſt rib, and extremities of the two next above it, and tendinous into the cartilages of all the reſt below the Sternum, and into the whole length of the Linea alba.

Uſe. Its uſe is much the ſame with the former, the action of both being much ſtrengthened by the decuſſation and different courſe of their carnous fibres.

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* Obliquus internus. Winſlow and Albin.

N. B. Obliquus aſcendens runs in fleſhy between the three laſt ribs, where their cartilaginous endings do not adhere to one another.

*In a dog it ariſes alſo from the ſpinal proceſſes of the loins, by a thin tendinous membrane, like the former.*

N. B. If you will take the trouble to ſeparate the two tendons of theſe oblique muſcles, you will obſerve that that of the Internus is almoſt quite loſt in the tendon of the Externus, before it reaches what they call the Linea alba: but before you can effect this, you muſt cut thro' a tendinous membrane that comes from the tendon of the Tranſverſalis at the ſemilunary line, and joins in with that of the Aſcendens.

## PYRAMIDALIS FALLOP. *

Origin. ARISES fleſhy from the middle of the fore part of the Os Pubis.

Inſertion. Is inſerted by a long tendon at the union of the Muſculi tranſverſales, between the Recti, a little below the navel.

Uſe. Its uſe is to promote the diſcharge of urine, by pulling the lower belly downwards,

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* N. B. This muſcle is often wanting in one ſide, or both.

wards, and compreſſing the bladder, according to its firſt diſcoverer.

*In a dog it is wanting.*

### RECTUS *

ARISES from the upper and anterior part of the Os Pubis by a thick and ſhort tendon, and from the ſame bone near the origin of the Corpus Penis cavernoſum by a long and ſmall one. It ſoon becomes fleſhy. Origin.

Is inſerted tendineo-carnous into the cartilaginous extremities of the ſeventh, ſixth and fifth rib, near the Os Pectoris. Inſertion.

It is much broader at its inſertion than in any other part, where it receives ſome fleſhy fibres from the lowermoſt origination of the pectoral muſcle.

Its uſe is to compreſs the fore part of the lower belly, and according to the different poſitions of the body, to bring the breaſt nearer the Pubis, and ſo bend the trunk forwards, or *è contrà*, as in raiſing our bodies from a decumbent poſture. Uſe.

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* Le Droit. Winſlow.

*In a dog it is inſerted fleſhy into the lower part of the Sternum, and tendinous into all the reſt of that bone.*

N. B. The tendons of the oblique muſcles cannot be eaſily ſeparated from the interſections of the Rectus, the lowermoſt of which lies parallel with the navel, but all the reſt are above it.

## TRANSVERSALIS

Origin. ARISES by a broad and thin tendon from the tranſverſe proceſſes of the Vertebræ Lumborum, fleſhy from the inner edge of the ſpine of the Ilium, and from the cartilaginous endings of all the ribs below the Sternum.

Its fleſhy fibres above the fore part of the Os Ilium run diſgregated, and firmly adhere to the muſcle above them

Inſertion. Is inſerted tendinous and fleſhy into the Cartilago enſiformis, tendinous into all the Linea alba and Peritonæum, being firmly annexed to a little protuberance in the Os Pubis, on the outſide of the Muſculus Abdominis Rectus.

Its uſe is to compreſs the ſides of the Abdomen, and to aſſiſt in expiration. Uſe.

N. B. 1. By the Peritonæum, in my deſcription of the Abdominal muſcles, I underſtand what authors call Ligamentum Pubis; it being nothing but the firm union of the tendons of the oblique and tranſverſe muſcles with the Peritonæum, between the anterior part of the ſpine of the Ilium and the Os Pubis, whereby a protruſion, or falling down of the inteſtines, &c. in that place, which has nothing elſe to ſecure it, is effectually prevented.

2. Theſe three laſt named muſcles ought not to be reckoned as ſo many pairs, but only as ſo many ſingle digaſtric muſcles, with a broad middle tendon, and two fleſhy bellies.

This was the prevailing opinion in Columbus's time. Vid. Reald. Columb. de re anat. lib. v. cap. xxii. de muſculis.

3. The Linea alba is nothing but part of the tendons of theſe oblique and tranſverſe muſcles appearing in the in-

terſtice of the Recti, between the cartilago Ziphoides and the Os Pubis, and adhering firmly to one another in this place; which ſtrict union occaſions the whiteneſs to be more conſpicuous here than in any other part. So that it was only in compliance with cuſtom, that I ſaid their tendons were inſerted into this white line.

4. They are all three perforated a little above the Os Pectinis to one ſide, the two oblique in their tendinous, and the tranſverſe in its fleſhy part, for the paſſage of the Proceſſus Peritonæi, receiving the Vas deferens and the ſpermatic vein and artery, incloſed in a large membrane diſtinct from the elongation of the Peritonæum. But beſides theſe, I always obſerve a nerve and an artery paſs that way from the Abdomen to the Scrotum, Inguen, and upper part of the Femur; from whence ſome venal twigs are remitted through the ſame holes into that cavity. The Cremaſter muſcle does only pierce the two oblique muſcles. The ſurpriſing and moſt uſe-

ful contrivance of the perforations or rings of theſe muſcles ſhall be enquired into on another occaſion.

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## CHAP. III.

## Of the muſcles of the TESTES.

EACH Teſticle has one proper muſcle, and one common to both, called

**DARTOS,** *

Which is a thin muſcular membrane, including both the Teſtes.

Its uſe is to contract and wrinkle the Scrotum by the action of its fleſhy fibres.

The muſcle proper to each is the

**CREMASTER,**

Which ariſes from the loweſt and fore part of the ſpine of the Ilium, and from the Origin.

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* Monro, Albinus, and Haller, have left out the Dartos from among the number of the muſcles, as it is nothing but the cellular membranes of the Scrotum collapſed. Vid. Med. Eſſays, vol. v. art. xix.

the conjunction of the Os Pubis, with this bone by two diſtinct beginnings.

Inſertion. Is inſerted into the Tunica vaginalis, upon which it is ſpread in ſeveral diſtinct portions.

Uſe. Its uſe is to draw up and ſuſpend the Teſtis.

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## CHAP. II.

## Of the muſcles of the PENIS.

THE Penis has two pair of muſcles, the firſt is very diſtinct, the laſt is inſeparately united in its origin and progreſs. The Tranſverſalis Penis, mentioned by Aquapendens, is only part of the Muſculus accelerator Urinæ, ariſing from the knob of the Iſchium; for it is not inſerted into the Cavum ovale, or bulb of the Urethra, but joins in with this muſcle, of which it makes a ſecond beginning.

Some deſcribe and delineate for the Tranſverſalis Penis the Levator Ani externus Riol.

ERECTOR

### ERECTOR PENIS *

ARISES tendinous and fleſhy from between the tubercle of the Iſchium, and the beginning of the Corpus cavernoſum, and embracing the whole Crus, Origin.

Is inſerted into the external thick membrane of the two cavernous bodies of the Penis, near the union. Inſertion.

Its uſe is to pull the Penis towards the Os Pubis, whereby its great vein is compreſſed, and the refluent blood denied its paſſage under thoſe bones, by which means that member is erected. Vid. the appendix to Mr. Cowper's excellent treatiſe of Myotom. reformat. Uſe.

### ACCELERATOR URINÆ †

ARISES fleſhy from the Sphincter Ani, and ſuperior part of the Urethra, and tendinous from the Iſchium. Origin.

Is inſerted into the Corpus cavernoſum, from near their beginning to a little below their union. Inſertion.

Its

* L'Ichio-caverneux. Winſlow.

† Le Bulbo-caverneux. Winſl.

Uſe. Its uſe is to compreſs moſt adequately the bulbous or largeſt part of the Urethra, and drive the blood towards the glans for its diſtention.

*A dog has yet another muſcle beſides theſe two, which may be called Tranſverſalis ; it is a true digaſtric muſcle, having two fleſhy bellies ariſing from a little round protuberance in the inferior part of the Os Pubis, on each ſide, uniting in a middle tendon between the Os Pubis and the Penis. From the particular ſtructure of this muſcle, with a cartilaginous body placed tranſverſely under the Oſſa Pubis, and the great vein of the Penis, running between the muſcle and it, I could eaſily account for the Erectio Penis in this animal, who copulates backwards. But that being foreign to the ſubject in hand, I will reſerve it for a fitter occaſion.*

## CHAP. IV.

## Of the muſcles of the ſkin of the Os OCCIPITIS and Os FRONTIS.

THE ſkin of the head is moved by one pair of muſcles, and one ſingle digaſtric muſcle.

### MUSCULUS FRONTALIS VERUS, ſeu CORRUGATOR Coiteri, *

ARISES fleſhy from the proceſs of the Os Frontis, next the inner or great angle of the orbit, above the joining of the Os Naſi and ſuperior proceſs of the Os maxillare with this bone, from thence it runs obliquely, outwards and upwards, and Origin

Is inſerted into the fleſhy part of the ſubſequent muſcle, ſome of its Fibrillæ paſſing through into the ſkin a little higher than the middle region of the eye-brows. Inſertion

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* Corrugator Supercilii. Albin.
Le Muſcle ſourcilier. Winſl.

Uſe. Its uſe is to ſmooth the ſkin of the forehead, by pulling it down after the action of the Occipito frontalis; and when it acts more forcibly, it ſerves to wrinkle the ſkin of the front, between the Supercilia, as it happens when we frown or knit the brows.

*This is wanting in a dog.*

### OCCIPITO-FRONTALIS *

Origin. ARISES fleſhy from the tranſverſe line of the Occiput, oppoſite to part of the ſuperior termination of the Maſtoidæus, and part of the beginning of the Trapezius next it, and then tendinous from the reſt of that line backwards, ariſing after the ſame manner on the other ſide; from thence it goes ſtraight up, and ſoon becoming all tendinous, it covers the two parietal bones, and the Oſſa ſquammoſa, above the temporal muſcles, its outer edge being faſtened to the Os jugale on each ſide. This broad tendon near the coronal ſuture grows fleſhy, and deſcends with ſtraight fibres as low as the Muſculi Orbiculares.

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* Epicranius. Albin.

Is inſerted into the ſkin at the eyebrows, having ſent down between them a narrow fleſhy ſlip or elongation, which is continued over the Oſſa Naſi as far as its cartilaginous part, where its fibres run off on each ſide, and terminate in the ſkin above the Muſculus Naſi proprius. Inſertion.

When this digaſtric muſcle, which covers all the upper part of the ſkull like a cap, acts, it pulls the ſkin of the head backwards, and at the ſame time it draws up and wrinkles that of the forehead, being antagonized by the Corrugator. Uſe.

*This muſcle in a dog is only part of the Membrana carnoſa, that covers all the ſkull between the ſkin and the muſcles.*

Columbus was of the opinion that the Muſculus occipitalis, which he firſt deſcribed, and named Muſculus ſupercilium trahens, joined the Frontalis by its broad tendon, and ſo drew the ſkin of the fore-head and hind-head backwards. Vide cap. vii. de Muſculis.

## CHAP. V.

### Of the muſcles of the Eye-lids.

THE Palpebræ have two pair of muſcles; one is proper to the upper lid, the other is common to both.

### Aperiens Palpebram Rectus, Fallop.[*]

Origin. Ariſes from the upper part of the hole of the ſphenoidal bone, through which the optic nerve paſſes, between the Attollens and the Obliquus major.

Inſertion. Is inſerted by a broad tendon into the cartilaginous border of the upper eye-lid.

Uſe. Its uſe is to open the eye, by drawing the eye-lid up.

### Orbicularis Palpebrarum[†]

Origin. Ariſes tendinous and fleſhy from the edge of the Os maxillare, that makes the lower part of the orbit, at the inner angle of the eye. Its fibres are ſpread upon the under lid, and a great part of the Os Mali, and, ſurrounding the outer and little Canthus, they are continued over the upper part of the orbit, at the great angle, firmly adhering to part of the Os Frontis, and ſuperior proceſs of the Os maxillare.

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[*] Levator Palpebræ ſuperioris. Albin.
Apertor Oculi. Spigel.
Pyramidalis. Molinett.

[†] Sphincter. Molinett.

Its uſe is to ſhut the eye, by bringing down the upper lid, and pulling up the lower. Uſe.

N. B. The Ciliaris Riolani is only part of this muſcle next the Cilia or Tarſi.

I have often taken notice of a little fleſhy ſlip, which parted from the Orbicularis Palpebrarum, and run down with the Zygomaticus.

*In a dog it ariſes tendinous from the upper part of the Os jugale, at the external Canthus of the eye; it divides and ſurrounds each eye-lid with its fleſhy Fibrillæ, which acting muſt neceſſarily pull up both eye-lids, bring them nearer one another, and ſhut them.*

# CHAP. VI.

## Of the muſcles of the EYES.

EACH eye has ſix muſcles.

### OBLIQUUS SUPERIOR *

Origin. ARISES from the edge of the hole that tranſmits the optic nerve tendinous, between the Elevator and Adductor, from thence it runs ſtraight along the Os planum to the upper part of the orbit, at the great Canthus where the Trochlea is affixed to the Os Frontis, through which it paſſes, and turning backwards,

Inſertion. Is inſerted tendinous into the Tunica Sclerotis behind the inſertion of the Attollens.

Uſe Its uſe is to draw the globe of the eye forwards, and to turn its pupil downwards.

OBLIQUUS

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* Trochlearis. Caſſer. Obliquus major. Molinett.

### OBLIQUUS INFERIOR *

ARISES tendinous from the Os maxillare, where it makes the edge of the orbit near its juncture with the Os Mali, and running obliquely outwards, Origin.

Is inſerted into the Sclerotis, between the inſertion of the Abductor and the optic nerve. Inſertion.

Its uſe is to draw the bulb of the eye forwards, and turn its pupil upwards. The uſes I have aſſigned to theſe two muſcles were firſt advanced by the ingenious and moſt accurate anatomiſt, Mr. Cowper. Uſe.

### ELEVATOR †

ARISES tendinous and fleſhy from the edge of the Foramen lacerum near the Abductor. Origin.

Is inſerted into the ſuperior and forepart of the Tunica Sclerotis by a thin tendon. Inſertion.

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* Obliquus minor. Molinett.

† Attollens, Superbus, rectus ſuperior.

Uſe. Its uſe is to lift up the globe of the eye.

### DEPRESSOR *

Origin. ARISES tendinous and fleſhy from the lower edge of the hole that gives paſſage to the optic nerve,

Inſertion. Is inſerted by a thin tendon into the Scletoris oppoſite to the inſertion of the former.

Uſe. Its uſe is to pull the globe of the eye down.

### ADDUCTOR †

Origin. ARISES tendinous and fleſhy from the edge of the hole in the ſphænoidal bone, that tranſmits the optic nerve, between the Obliquus major and the Humilis.

Inſertion. Is inſerted by a thin tendon into the Tunica ſclerotica, where it reſpects the great Canthus.

Uſe. Its uſe is to bring the eye toward the noſe.

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* Deprimens, Humilis, rectus inferior.

† Bibitorius, rectus interior.

### ABDUCTOR *

ARISES tendinous and fleſhy from the Foramen lacerum, without the orbit. Origin.

Is inſerted by a thin tendon into the Sclerotis, where it reſpects the little Canthus. Inſertion.

Its uſe is to move the eye outwards, from the great to the little angle. Uſe.

*Beſide theſe ſix, a dog has two more, of which one belongs to the globe itſelf, the other to the Trochlea of the eye; the firſt is called Muſculus ſeptimus oculi ſuſpenſorius, it ariſes from the margin of the hole through which the optic nerve paſſeth into the eye, and is inſerted, being divided into four or five fleſhy portions, into the lower part of the Sclerotica, below the termination of the other muſcles. Its uſe is to ſuſtain and keep up the bulb of the eye, that it may not fall too low, and thereby put a ſtreſs on the nerve in this and other animals that go much with their heads down, or feed upon the ground.*

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* Indignatorius, Iracundus, rectus exterior.

*The other I call Muſculus Trochleæ proprius, which is a very ſmall muſcle, ariſing fleſhy near the origin of the Obliquus major, and ſoon turning into a ſlender tendon, is inſerted into the Trochlea, to whoſe motions it is ſubſervient. A deſcription of this cartilaginous ring will be given at the end of my Comparative Oſteology.*

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## CHAP. VII.

## Of the muſcles of the NOSE.

THE cartilaginous part of the noſe has one pair of proper muſcles, and three pair common to it with other parts.

### RINÆUS, vel NASALIS, ***

Origin. ARISES fleſhy from the extremity of the Os naſi, and adjacent part of the Os maxillare.

Inſertion. Is inſerted into all the cartilages of the Ala.

Uſe. Its uſe is to open and dilate the noſtril, by pulling that part outwards.

The firſt of the common is an elongation of the Occipito frontalis already deſcribed, and ſerves to draw the ſkin of the noſe upwards and backwards *.

The ſecond is part of the Elevator Labii ſuperioris proprius, ariſing from the upper part of the Os maxillare, where it joins the Os Frontis at the inner Canthus †.

The third is common to it with the upper lip, being part of the Depreſſor Labii ſuperioris proprius.

*For the motion of a dog's flat noſe, which is continued to the very extremity of the Maxilla ſuperior, there are no proper muſcles.*

## CHAP. VIII.

## Of the muſcles of the LIPS.

THE muſcles of the lips are either common or proper. The common are inſerted into the angles of the mouth, where the two lips join, being equally uſeful to both; they are three pair in number, and one odd one.

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* Les pyramidaux. Winſl.

† Levator Labii ſuperioris alæque Naſi. Alb. La grande portion de l'Inciſif lateral. Winſl.

### ZYGOMATICUS *

Origin. ARISES fleſhy from the Os Mali, near its conjunction with the long proceſs of the Os ſquammoſum.

Inſertion. Is inſerted near the angle of the lips.

Uſe. Its uſe is, with its partner, to draw both lips upwards.

### ELEVATOR LABIORUM COMMUNIS ‡

Origin. ARISES thin and fleſhy from the hollow of the Os Maxillare, under the hole called Orbitèr externus.

Inſertion. Is inſerted into the angle of the mouth and under lip.

Uſe. Its uſe is to bring the two lips upwards.

### DEPRESSOR LABIORUM COMMUNIS §

Origin. ARISES broad and fleſhy from the lower edge of the Maxilla inferior, between

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* Zygomaticus major. Albin. & Winſl.

‡ Levator anguli Oris. Albin. Le Canin. Winſl.

§ Depreſſor anguli Oris. Albin. Le Triangulaire. Winſl.

tween that part of the Latiſſimus Colli, which climbs over the Maxilla to the angle of the lips, and the Depreſſor Labii inferioris proprius.

Is inſerted into the angle of the lips. Inſertion.

Its uſe is to pull down the corners of the mouth. Uſe.

### SPHINCTER LABIORUM *.

THE fleſhy fibres of this muſcle ſurround the lips like a ring. Origin.

Its uſe being to conſtringe and draw both lips together. Uſe.

The proper belong either to the upper or lower lip, and are four pair in number, two muſcles on each ſide to each lip.

### ELEVATOR LABII INFERIORIS PROPRIUS, Cowper. ‡

ARISES from the lower jaw, near the gums of the Dentes inciſivi. Origin.

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* Orbicularis Oris. Albin.
Conſtrictor Oris. Cowp.
Les demi-orbiculaires, &c. Winſl.

‡ Levator Menti. Albin.
L'Inciſif inferieur. Winſl.

Inſertion. Is inſerted into the ſkin of the chin, Uſe. which it draws upwards, together with the lower lip.

### ELEVATOR LABII SUPERIORIS PROPRIUS †

Origin. ARISES broad and fleſhy from all that portion of the Os maxillare that makes the lower part of the orbit, immediately above the hole that tranſmits the nerves and arteries to the cheeks, and admits their returning veins, being joined on each ſide by a narrow fleſhy ſlip ‖, the ſhorteſt coming from the Os Mali, near the origin of the Zygomaticus; the longeſt proceeding from all the upper proceſs of the firſt named bone, where it joins the Os Frontis at the great Canthus of the eye, and deſcends by the edge of the Ductus lachrymalis.

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† L'Inciſif lateral. Winſl.

‖ Theſe fleſhy ſlips are deſcribed by many authors as diſtinct muſcles; the ſhorteſt being the Zygomaticus minor. Albin. & Winſl. and the longeſt is the Elevator Labii ſuperioris alæque Naſi. Albin.

Is inſerted into the upper lip, ſending ſome Fibrillæ to be ſpread on the Ala narium. Inſertion.

Its uſe is to draw that lip outwards, and when both act in concert, to pull it upwards. Uſe.

### DEPRESSOR LABII INFERIORIS PROPRIUS *

ARISES fleſhy from the inferior and anterior part of the lower jaw, called the chin. Origin.

Is inſerted into the under lip near its Sphincter. Inſertion.

Its uſe is to pull the lower lip down, and a little outwards. Uſe.

### DEPRESSOR LABII SUPERIORIS PROPRIUS, Cowper. §

ARISES thin and fleſhy from the Os maxillare, immediately above the gums of the Dentes inciſivi. Its origin is continued as far back as the foremoſt Dens molaris, Origin.

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[*] Le Quarré. Winſl.

[§] Depreſſor alæ Naſi. Albin.
L'Inciſif mirtoyen. Winſl.

molaris, from whence it runs up under part of the Levator Labii ſuperioris proprius, to its termination.

Inſertion. Is inſerted into the ſuperior part of the upper lip and root of the Ala naſi.

Uſe, Its uſe is to draw downwards the parts in which it terminates.

*The lips of a dog are moved by five pair of muſcles and a ſphincter.*

*The Zygomaticus has a great many of its fibres ſpread upon the Buccinator, whereby it is able to draw the lips more forcibly upwards and ſideways.*

*Elevator Labii ſuperioris ariſes fleſhy from the lower or little angle of the orbit, growing broader as it deſcends to its large inſertion into the upper lip, which it pulls upwards when this animal ſnarls, &c.*

*Depreſſor Labii inferioris comes from about the middle of the Roſtrum, or lower jaw.*

*If you cut the gums above the Dentes inciſivi of both lips, you will have a fair proſpect of the Elevator Labii inferioris, and the Depreſſor Labii ſuperioris, running, as in man.*

## CHAP. IX.

## Of the muſcles of the Cheeks.

THE cheek, called Gena and Bucca, has no proper muſcles of its own, being provided with two common to it, and ſome other parts; the firſt is common to it, with the lips; the ſecond is common to it, the lower jaw, the lips, and moſt part of the ſkin of the face.

### Buccinator.

Arises by two diſtinct beginnings on each ſide, one tendinous and fleſhy from the lower jaw, between its laſt Dens molaris, and the root of the fore-part of its Proceſſus coronæ; the other is fleſhy from the upper jaw, between its laſt Dens molaris and the Proceſſus pterigoides, from whoſe extremity alſo it ariſes tendinous, being continued between theſe two originations to the Pterigo-pharyngæus on one ſide, and the Mylo-pharyngæus on the other; from thence proceeding with ſtraight fibres, and adhering to the membrane that co- Origin.

vers the inſide of the mouth, but without touching the gums of either jaw.

Inſertion. Is inſerted into the angle of the lips.

Uſe Its uſe is not only to move the cheeks with the lips, but alſo to contract the cavity of the mouth, by bringing them inwards, and ſo thruſt the meat between the teeth for its better comminution.

### QUADRATUS GENÆ, vel LATISSIMUS COLLI [†],

Origin. ARISES broad, thin, and membranous, interlaced with abundance of carnous fibres, which in their aſcent do all unite, and make one continued fleſhy ſubſtance, from the Sternum between the firſt and ſecond rib, from the Acromion and between theſe two, from the proper or inveſting membranes of the Pectoral and Deltoidal muſcles.

Inſertion. Is inſerted into that ſpace of the external Labrum, or lip of the lower jaw, that's between its commiſſure and the backmoſt origin of the Depreſſor labiorum communis, into the Buccinator, near the angle of the mouth, by a ſlip that runs up between the Depreſſor Labiorum communis and the Maſſeter, and membranous into the ſkin of the face. As theſe two muſcles approach the chin, they are obſerved to decuſſate one another; that is, part of the muſcle on the right ſide runs over the other, and is fixed to the lower jaw on the left ſide, and part of the muſcle of the left ſide runs under the other, and is inſerted into the lower jaw on the right ſide.

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[†] Tetragonus, Platyſma myoides. Le Peaucier. Winſl.

Its uſe is to draw the cheeks and ſkin of the face downwards, and to aſſiſt the Digaſtric in opening the mouth. Uſe.

*In a dog it is only part of the Membrana carnoſa, expanded over the neck and the Muſculus buccinator.*

## CHAP. X.

### Of the muſcles of the external EAR.

THE muſcles of the auricle are common or proper; the common proceed either from the middle tendon of the Occipito frontalis, or from the Quadratus genæ, and move this part according to their reſpective inſertions, whence they are divided into ſo many muſcles, and named by authors from their uſe, as Attollens, ſeu Muſculus Auriculæ anterior, deprimens, &c.

The proper muſcles of the auricle, or outer part of the ear, are ſuch as ariſe from the Os petroſum and Parietale, and are inſerted into the Concha under the common. Their number is uncertain.

*The muſcles ſubſervient to the motion of a dog's external ear are ſo very numerous, as well as ſmall, that I think it needleſs to inſiſt on a particular account of each of them, a deſcription of two of the moſt remarkable being ſufficient.*

*Retrahens ad collum ariſes from the union of the Muſculi cucullares, above the ſecond or third ſpinal proceſs of the neck, and ends in the lateral and upper part of the Concha.*

*Erigens ariſes from the bony ridge of the Os Occipitis, and terminates by three fleſhy portions into the outward ear. Its uſe being to erect or prick the ears.*

# CHAP. XI.

## Of the muſcles of the internal EAR, and auditory PASSAGE.

THE parts of the internal ear provided with muſcles are the two little bones, called Malleus and Stapes; the hammer has three, and the ſtirrup one.

### EXTERNUS AURIS, Aquapendent. vel Jul. Caſſer. Placent. *

ARISES fleſhy from a roughneſs in the upper ſide of the Meatus auditorius about its middle. Origin.

Is

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* Laxator Tympani. Albin.
L'externe, ou ſuperieur du Marteau. Winſl.

Inſertion. Is inſerted by a long and ſlender tendon into the upper proceſs of the Malleus, that adheres to the Membrana Tympani.

Uſe. Its uſe is to draw the hammer with the Membrana Tympani outwards.

*In a dog it comes from the Os petroſum, oppoſite to the long proceſs of the Malleus.*

### INTERNUS AURIS, Euſtach. *

Origin. ARISES tendinous and fleſhy from the beginning of the cartilaginous and extremity of the bony part of the Tuba Euſtachiana, and running in a long channel, excavated in the Proceſſus petroſus; it grows tendinous as it enters the cavity of the barrel, and paſſing over a little riſing made by the extremity of this pipe near the Feneſtra ovalis,

Inſertion. Is inſerted into the poſterior part of the handle of the Malleus, a little from its head.

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* Tenſor Tympani. Albin.
L'Interne du Marteau. Winſl.

Its uſe is to pull the hammer inwards, nearer the Os petroſum. Uſe.

N. B. The bone that ſome obſerve to be in the tendon of this muſcle, is nothing elſe, in my opinion, but the extremity of the long channel in which it runs, broke off from the Os petroſum, and left adhering to the tendon.

### OBLIQUUS AURIS, vel EXTERNUS, Duvern. *

ARISES fleſhy as the former, whence marching backwards through a channel in the upper and external part of the Tuba Euſtachii, without entering the cavity of the barrel. Origin.

Is inſerted into the ſlender proceſs of the Malleus, that lies upon the edge of that oblique ſinuoſity that is moſt remarkable in the bony circle of a Fœtus. Inſertion.

Its uſe is to draw the hammer forward, nearer that part of the temple-bone from which, in part, it takes its origin. Uſe.

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* Externus Mallei. Albin.

L'Anterieur du Marteau. Winſl.

origin. Of this proceſs Cæcilius Folius has given the beſt deſcription; in length it exceeds that of the Manubrium Malleoli, and in ſhape it very much reſembles a ſmall fiſh-bone.

*In a dog it may be called Muſculus glandiformis, or ovalis, becauſe it appears like a glandulous lump of an oval, or roundiſh figure, which lies in a particular cavity dug for it in the Os petroſum, near the Foramen ovale, from the bottom of which it ſprings, and is inſerted by a very ſlender tendon.*

### STAPIDÆUS, vel MUSCULUS STAPEDIS, Duvern. *

Origin. ARISES fleſhy from the bottom of a channel excavated in the Os petroſum, about the middle of the true Fallopian Aqueduct laterally.

Inſertion. Is inſerted tendinous into the ſide of the head of the Stapes.

Its uſe is to draw the Stapes upwards.

MUSCULUS

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[*] Stapedius. Albin.

**MUSCULUS MEATUS AUDITORII *****

ARISES from one of the diſcontinued cartilages of this paſſage, and Origin.

Is inſerted into another, which it ſerves to approximate and draw nearer one another. Insertion. It is only obſervable in a large and fleſhy ſubject. Uſe.

*In a dog there are ſeveral little muſcles, which come from one of the protuberating cartilages of the Concha, and end in another of them, which, by pulling them nearer, or drawing them farther from one another, may dilate or ſtraiten the Porus acouſticus, or auditory tube, for the fitter reception of ſounds, as occaſion may require.*

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## CHAP. XII.

## Of the muſcles of the Os HYOIDES.

THE bone of the tongue, called Os hyois, has five pair of muſcles, and one odd one, which are all common to it with the tongue and the larynx.

### MYLO-HYOIDÆUS, Fallop.

Origin. ARISES fleſhy and a little tendinous from all the inſide of the lower jaw, between the backmoſt Dens molaris, and the commiſſure of the two bones.

Inſertion. Is inſerted into the lower edge of the baſis of the Os hyoides.

Uſe. Its uſe is to pull this bone upwards, forwards, and to either ſide, according as its fibres run.

### GENIO-HYOIDÆUS.

Origin. ARISES tendinous from a rough protuberance at the inſide of the chin, or from the fore-part of the lower jaw, internally.

Inſertion. Is inſerted into both the edges of the baſis of the Os hyoides, remitting a fleſhy ſlip to the beginning of each of its proceſſes.

Uſe. Its uſe is to draw this bone upwards and forwards.

STYLO-

### STYLO-HYOIDÆUS *

ARISES by a round tendon from near the middle of the Proceſſus ſtyliformis. Origin.

Is inſerted tendinous into the baſis of the Os hyois near its Cornu, to which alſo it often adheres fleſhy. Inſertion.

*N. B.* The carneous belly of this muſcle is ſometimes divided on both ſides for the paſſage of the middle tendon of the digaſtric, ſometimes but on one ſide only, and ſometimes it is unperforated on both ſides.

Its uſe is to pull the bone of the tongue to one ſide, and a little upwards when both act in concert. Uſe.

### STYLO-CHONDRO HYOIDÆUS, *** vel STYLO-HYOIDÆUS ALTER, ‡

ARISES fleſhy and tendinous from the Styloide Proceſs, near the origin of the Stylo-pharyngæus, and running under the Cerato-gloſſus, Origin.

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* Stylo-cerato-hyoideus. Spigel.

‡ Stylo-hyoides novus. Santorin.
N. B. This little muſcle is often wanting.

Inſertion. Is inſerted into the cartilaginous appendix of the Os hyoides.

Uſe. Its uſe is to aſſiſt the former in pulling this bone upwards and laterally.

### CORACO-HYOIDÆUS *

Origin. ARISES broad, thin, and fleſhy from the ſuperior Coſta ſcapulæ, near its Sinus or Cavitas ſemilunaris, as alſo from ſome part of the ligament that runs from the edge of this cavity to the root of the Proceſſus coracoides, thence aſcending obliquely, it becomes tendinous between the Maſtoidæus and Vena jugularis interna, but ſoon growing fleſh again,

Inſertion. Is inſerted by a thin tendon into the baſis of the Os hyois, between the termination of the Sterno-hyoides and its Cornu.

Uſe. Its uſe is to pull this bone obliquely downwards.

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* Coſto-hyoides. Santorin.

L'Omoplat-hyoidien, ou l'omo-hyoidien. Winſlow.

*N. B.* R. Columbus firſt took notice of the true origin of the Coraco-hyoidæus.

## STERNO-HYOIDÆUS *

ARISES fleſhy and thin from the cartilaginous part of the firſt rib, the upper and inner part of the Os Pectoris, and from the adjoining inferior part of the Clavicula. Origin.

Is inſerted between the middle of the baſis of the Os hyoides and the Coraco-hyoides. Inſertion.

Its uſe is to pull that bone directly downwards. Uſe.

*A dog has neither the Stylo-chondro, nor the Coraco-hyoidæus; but inſtead of theſe it has two more, which are not to be found in the human body, viz.*

*Chondro-cerato-hyoidæus, which is a ſmall fleſhy muſcle that comes from all the cartilaginous appendix of the bone Hyois,*

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* Le Sterno-hyoidien, ou Sterno-cleido-hyoidien. Winſl.

*and ends into all the ſhorteſt Proceſs, or Cornu, that joins the Cartilago Thyreoidæa of the Larynx; its uſe being to draw them nearer one another. And*

*Inio-cerato-hyoidæus. This is a very ſhort fleſhy muſcle, which ariſes from the fore-part of that proceſs of the occiput, which gives origin to the digaſtric of the lower jaw, and is inſerted near the extremity of the longeſt proceſs of the Os hyoides, which it pulls backwards.*

*The Stylo-hyoidæus ariſes from the horn of the Os hyoides, near its adheſion to the Occiput, and, running acroſs the digaſtric muſcle is inſerted into the baſis of that bone. It is a long and ſlender fleſhy muſcle.*

*The Sterno-hyoidæus ariſes fleſhy in common with the Sterno-thyreoidæus, from the inſide of the cartilaginous part of the firſt rib next the Sternum; it parts from the aforeſaid muſcle about two inches or more above their united origin.*

CHAP.

## CHAP. XIII.

## Of the muſcles of the TONGUE.

THE tongue has four pair of muſcles, which may be called proper, becauſe they are all inſerted into its own ſubſtance.

### GENIO-GLOSSUS

Origin. ARISES tendinous from a rough protuberance in the inſide of the fore-part of the lower jaw about the middle of the chin. Inſertion. Its fibres run in three different directions; the middlemoſt terminates about the middle of the tongue, the anterior is carried forwards towards its tip, and the poſterior or laſt order runs obliquely backwards towards the root of the tongue, and by a narrow ſlip aſcends on each ſide to the horns of the Os hyoides.

Uſe. Its uſe is to move the tongue according to the different direction of its fibres, *i. e.* to pull it forwards, and thruſt it out of the mouth, to draw it into the mouth, or to bring the tip of the tongue downwards and backwards.

### CERATO-GLOSSUS *

Origin. ARISES fleſhy from three different places; its firſt origin is broad and carnous from the Cornu of the bone Hyois; this is properly the Cerato-gloſſus: its ſecond head comes from part of the baſis of this bone, and is named Baſio-gloſſus: the third beginning is derived from the cartilaginous appendage of the Hyoides, which ſome call Chondro-gloſſus: theſe three unite, and their fibres running in the ſame direction,

Inſertion. Are inſerted broad and thin near the root of the tongue laterally.

Uſe. Its uſe is to draw the tongue obliquely to one ſide; but if both act at once, the tongue is pulled directly backwards, into the mouth.

*N. B.* In

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* Le Hyo-gloſſe. Winſl.

*N. B.* In ſome ſubjects I have obſerved, that a great part of the Cerato-gloſſus did ariſe from the baſis of the bone, and in ſome others I have found few or none of its fibres to ſpring from thence.

### STYLO-GLOSSUS

ARISES tendinous and fleſhy from the Proceſſus ſtyliformis of the temple-bone, and often alſo from a fleſhy ligament that is extended from that proceſs to the angle of the lower jaw. Origin.

Is inſerted into the ſide of the tongue from its root to near its middle. Inſertion.

Its uſe is to draw the tongue laterally, but when both act, to pull it upwards and inwards. Uſe.

*In a dog it ariſes from the extremity of the long proceſs of the Os hyoides.*

### LINGUALIS

ARISES pretty large and fleſhy from the baſis of the tongue laterally, and runs ſtrait forwards between the Cerato and Genio-gloſſus, to its tip, where it is Origin.

hard,

Inſertion. hard to determine whether it ends there, or if it returns circularly, after the ſame manner on the other ſide, to the root of the tongue again.

Uſe. Its uſe is to contract or narrow the ſubſtance of the tongue, and at the ſame time to bring it backwards and downwards.

*N. B.* Lingualis was firſt deſcribed by R. Columbus, being thus named only by Spigelius.

## CHAP. XIV.

## Of the muſcles of the LARYNX.

THE upper part or head of the Aſpera Arteria, called Larynx, is made up of five cartilages, three of which are provided with muſcles.

The Cartilago Thyreoidæa, or Scutiformis, has three muſcles on each ſide.

### HYO-THYREOIDÆUS *

Origin. ARISES fleſhy from part of the baſis, and almoſt all the Cornu of the Os hyoides.

Is

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* Thyro-hyoidien, ou Hyo-thyroidien. Winſl.

Inſertion.

Is inſerted into the outſide of a rough line that runs between the angles of the Cartilago ſcutiformis.

Uſe.

Its uſe is to pull the Larynx upwards.

### STERNO-THYREOIDÆUS

Origin.

ARISES fleſhy from all the edge of the firſt bone of the Sternum internally between the cartilages of the firſt and ſecond rib, from both which it receives two ſmall beginnings.

Inſertion.

Is inſerted tendinous and fleſhy into the ſurface of the above-mentioned rough line of the buckler-like cartilage. It very often remits a ſlip to the Cornu or Proceſs of the Os hyois.

Uſe.

Its uſe is to draw the Larynx downwards.

*In a dog the beginning of this muſcle is confounded with that of the Sterno-hyoidæus.*

### CRICO-THYREOIDÆUS

Origin.

ARISES fleſhy from the fore-part of the Cartilago Cricoides.

Inſertion.

Is inſerted into the lunated and lower part of the Thyreoides.

Its

Uſe. Its uſe is to dilate the cavity of the Larynx, by drawing the Scutiformis outwards, and to one ſide.

Each of the Arytænoidal cartilages has three proper muſcles, and two common to them both: the common are the two following.

### ARYTÆNOIDÆUS MAJOR ‡

Origin. ARISES fleſhy from one of theſe cartilages near its juncture or articulation with the Cricoides, and running tranſverſely of an equal breadth, with ſtraight fibres,

Inſertion. Is inſerted into all the ſame ſide of the other cartilage

Uſe. Its uſe is to ſhut the Rimula, or chink called Glottis, by bringing theſe two cartilages nearer one another.

### ARYTÆNOIDÆUS MINOR *** †

Origin. Is a very ſmall muſcle which runs upon the ſurface of the former, ariſing from that part of one of the Cartilagines Arytænoidææ next the Cricoides on one ſide, and terminating into that part of the other arytenoidal cartilage that is fartheſt from the Cricoides on the other ſide. Inſertion.

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‡ Arytænoïdeus obliquus. Albin.
L'Arytenoïdien croiſé. Winſl.

† Arytænoïdeus tranſverſus. Alb. & Winſl.

Its uſe is to aſſiſt the former in its action, which is much ſtrengthened by this manifeſt decuſſation of fibres. Uſe.

### CRICO-ARYTENOIDÆUS POSTICUS

ARISES fleſhy from the back part of the ring-like cartilage, and Origin.

Is inſerted into the Guttalis near the following. Inſertion.

Its uſe is to open the Rimula. Uſe.

### CRICO-ARYTENOIDÆUS LATERALIS

ARISES fleſhy from the Cartilago cricoides laterally. Origin.

Is inſerted into the Arytenoides or Guttalis, under the implantation of the ſuperior order of fibres belonging to the following muſcle. Inſertion.

Its uſe is to open the Glottis. Uſe.

### THYREO-ARYTENOIDÆUS

ARISES from the whole length of the internal concave, and middle part of the Origin.

the Cartilago ſcutiformis, from whence its fibres proceed in three different orders; Inſertion. the uppermoſt terminates into the Guttalis, near the inſertion of the Crico-arytenoidæus lateralis; the middlemoſt, which may be called Thyreoglottis, runs up under this, and is ſpread upon the membrane that comes between the Glottis and arytenoidal cartilage; the lowermoſt is inſerted into the anterior angle of this cartilage. Uſe. The ſuperior and inferior order of fibres do draw the cartilage, to which they are fixed, nearer the Scutiformis, and thereby do moſt adequately ſhut the Rimula or Glottis; the middlemoſt direction of fibres may help to pull the Epiglottis down when both act, or laterally when one only is contracted.

*The fifth cartilage of the Larynx, called Epiglottis, is furniſhed with a pair of muſcles in a dog, which I call Hyoglottus; it ariſes fleſhy from the cartilaginous appendix of the Os hyoides internally, and partly alſo from its baſis hard by the origin of the Baſioгloſſus; from thence each marches obliquely nearer*

*nearer one another to their united tendinous inſertion, in the middle of the upper part of the Epiglottis, not far from its tip, which it ſerves to raiſe and lift up again after it has been depreſſed in ſwallowing.*

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## CHAP. XV.

## Of the muſcles of the PHARYNX.

THO' I take the upper part of the Oeſophagus, or Pharynx, to be only made up of a pair of muſcles, one on each ſide, which I call Pharyngæus, whoſe fleſhy fibres running in different directions from diſtinct and various originals, do meet and unite upon the back of the glandulous membrane of the Fauces; yet, in imitation of the accurate Valſalva, I ſhall deſcribe each different order by itſelf, and name it from the place whence it ariſes.

1. CEPHALO-PHARYNGÆUS. This order of fibres ariſes from a little riſing, or Tubercle, in that proceſs of the Os

Occipitis that joins the Sphænoidal bone, not far from its great hole.

2. CHONDRO-PHARYNGÆUS, * * * This order ariſes from the cartilaginous appendage of the Os hyoides.

3. CRICO-PHARYNGÆUS, Valſ. Ariſes from the Cartilago cricoides, or Annularis.

4. GLOSSO-PHARYNGÆUS, Valſal. Ariſes from the root or upper part of the tongue laterally.

5. HYO-PHARYNGÆUS, Valſ. Ariſes from the Cornu or proceſs of the Os hyoides, wherefore I name it Hyo-cerato-pharyngæus.

6. MYLO-PHARYNGÆUS * * * † Ariſes from the lower jaw, near the laſt Dens molaris.

7. PTERIGO-PHARYNGÆUS, Cowp. Ariſes tendinous and fleſhy from the Pterigoidal proceſs of the Os ſphænoidale.

8. SALPINGO-PHARYNGÆUS, * * * Ariſes from the extremity of the bony

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† Le Myloglоſſe. Winſl.

part of the Tuba Euſtachii, commonly called the Aqueduct.

9. SYNDESMO-PHARYNGÆUS * * * Ariſes from the ligament that ties the Cornu of the Os hyoides to the proceſs of the Cartilago ſcutiformis

10. STYLO-PHARYNGÆUS Ariſes fleſhy from near the root of the Proceſſus Styliformis.

11. THYREO-PHARYNGÆUS, Valſ. This laſt order of fibres ariſes from that rough line that is extended between the two angles of the Thyreoidal cartilage, as alſo from ſome of its upper ſide *.

Now,

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* Young anatomiſts are greatly perplexed by the different accounts which authors have given of the muſcles of the Pharynx; ſome reckoning them but two or three in number, whilſt others have multiplied them to thirteen or fourteen on each ſide. Albinus's diviſion of them ſeems to be the moſt natural of any. According to him, there are ſix pair of muſcles belonging to the Pharynx, viz. Stylo-pharyngæus, three Conſtrictors, Salpingo-pharyngæus and Palato-pharyngæus.

Origin. Now, from theſe various beginnings does this muſcle of the Pharynx ariſe, and

The STYLO-PHARYNGÆUS, Alb. Is the ſame muſcle which Douglas deſcribed under that name.

The CONSTRICTOR INFERIOR, Alb. Is compoſed by the Crico-pharyngæus and the Thyreo-pharyngæus of Douglas.

The CONSTRICTOR MEDIUS, Alb. Comprehends the Hyo-pharyngæus, the Chondro-pharyngæus, and the Cephalo-pharyngæus of Douglas.

The CONSTRICTOR SUPERIOR, Alb. Is chiefly made up of theſe pacquets of fibres which Douglas has deſcribed by the names of Gloſſo-pharyngæus, Mylo-pharyngæus, and Pterigo-pharyngæus.

The PALATO-PHARYNGÆUS, Alb. Is the Thyreo-ſtaphilinus of Douglas, deſcribed in the following chapter.

The SALPINGO-PHARYNGÆUS, Alb. Is a very ſlender pacquet of fibres, which ariſes from the anterior extremity of the cartilaginous part of the Euſtachian Tube, and running down upon the back part of the Pharynx, joins in with the inferior extremity of the Palato-pharyngæus. Vide Euſtach. tab 42. fig. 4. and 6. where all theſe ſix muſcles are delineated.

and is inſerted into the membrane of the Fauces, where it meets with its fellow of the other ſide. As for its uſe, the fibres that ſpring from the Larynx, Os hyoides, and tongue, ſerve to contract the cavity of the gullet, and forward the aliment, &c. into the ſtomach. Thoſe, which ariſe from the other parts above deſcribed, do all ſerve to enlarge and dilate the cavity of the gullet, in as much as they pull it out on all ſides for the reception of the food, &c. Inſertion. Uſe.

*In a dog the Stylo-pharyngæus ariſes from near the extremity of the long Cornu of the Os hyoides, and the Salpingo-pharyngæus runs for ſome ſpace at a diſtance from the Membrana Faucium, different from what it does in man.*

## CHAP. XVI.

## Of the muſcles of the UVULA.

THE Gargareon, or Uvula, has four pair of muſcles.

### GLOSSO-STAPHILINUS, Valſ. *

Origin. ARISES fleſhy from the ſide of the tongue.

Inſertion. Is inſerted near the middle of the Uvula laterally.

Uſe. Its uſe is to pull it to one ſide, and when both act to bring it nearer the tongue.

### PALATO-STAPHILINUS *** †

Origin. ARISES fleſhy from the middle of the Os Palati, near its juncture with its fellow of the other ſide, and running ſtraight forward,

Inſertion. Is inſerted near the extremity of this duplicated glandulous membrane, called the Gargareon.

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* Gloſſo-palatinus. Santorin.
Conſtrictor Iſthmi Faucium. Albin.

† Azygus Uvulæ. Les Staphylins, ou Epiſtaphylins. Winſl.

Its uſe is to pull it forwards and downwards, which office was always ſaid to be performed by the Pterigo-ſtaphilinus internus, till Valſalva appeared, who corrected that miſtake, and aſcribed the muſcle ſo called to the tube of the ear as ſhall be ſhewn hereafter. Uſe.

N. B. The Palato-ſtaphilinus ſeems to have been partly known by Mr. Dionis, a French ſurgeon: for in his Anatomy of human bodies improved, he affirms the Uvula to be formed by the union of two little round muſcles, that ſpring from the Septum Naſi. If I had known ſo much when I firſt deſcribed theſe muſcles, his name, and not my mark, had been affixed unto them; and I had only given their true deſcription, which he has erred in. This ſame author does likewiſe very accurately deſcribe the two arches that reach from the ſides of the Uvula to the tongue, which are afterwards reckoned two new muſcles by Valſalva, under the name of Gloſſo-ſtaphilini.

### SALPINGO-STAPHILINUS, Valſ. PTERIGO-STAPHILINUS EXTERNUS VULGO *

Origin. ARISES fleſhy from the bony part of the tube of the ear, and

Inſertion. Is inſerted into the baſis of the Uvula, where it joins fibres with its partner muſcle on the other ſide.

Uſe. Its uſe is to draw the Uvula upwards and backwards.

The circular fibres of the Thyreo-ſtaphilini cover the laſt deſcribed muſcles.

N. B. SALPINGO-STAPHILINUS is a pretty thick and round muſcle, its true origination being pointed at by Veſlingius in his Syntagm. Anatom. cap. xi. pag. mihi 175 long before Valſalva chriſtened it by this name.

### THYREO-STAPHILINUS *** ‡

Origin. ARISES fleſhy from the edge of the upper part of the Cartilago-Thyreoides, between the Thyreo-pharyngæus and the Membrana Faucium, from thence it aſcends ſtraight upwards, being much dilated as it approaches the Uvula, upon the upper ſide of which it is very broad. And here it is not eaſy to determine, even when the membrane that covers it is removed, whether it unites with its partner, or if its fibres ſurround the Gargareon, and then deſcend to the upper part of the Cartilago ſcutiformis on the other ſide. Inſertion.

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* Levator Palati mollis. Albin.

Le Petro-ſalpingo-ſtaphylin, ou Salpingo-ſtaphylin interne. Winſl.

‡ Palato-pharyngæus. Albin.

Le Thyreo-pharyngo-ſtaphylin. Winſl.

In deglutition, when this pair of muſcles act, the Foramina Narium are in a great meaſure ſhut to hinder the paſſing of any thing through the noſe that is taken in at the mouth. Uſe.

*In a dog between the tonſils are placed two ſpongy bodies, like teats, at a little diſtance from one another, formed of a production or folding of the glandulous membrane, that lines the mouth, and in all reſpects ſeem analogous to that part in man; each of them is provided with two muſcles; one to pull them down, which ariſes and is inſerted like the Gloſſo-ſtaphilinus in man; the other draws them*

*them upwards from the paſſage into the noſe. It ariſes, proceeds, and is inſerted, like my Palato-ſtaphilinus, being a very long and ſlender muſcle.*

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## CHAP. XVII.

## Of the muſcles of the TUBA EUSTACHIANA.

THE canal of communication between the mouth and barrel of the ear, Aquæductus Fallopii vulgo, is by that accurate anatomiſt Antonius Valſalva, called Tuba, from its figure, and Euſtachiana, from its firſt diſcoverer Bartholomæus Euſtachius; for to dilate and keep it open, he deſcribes a new muſcle, for he firſt found out that the muſcle called Pterigo-ſtaphilinus internus and Sphæno-pterigo-palatinus does not belong to the Uvula, but unto this paſſage.

### MUSCULUS TUBÆ NOVUS Valſal. vel PALATO-SALPINGÆUS *** †

In my late enquiries into the muſcular ſtructure of the Fauces, I have always obſerved that this muſcle

ARISES broad and tendinous from the edge of all the lunated part of the Os Palati, ſeveral of its fibres being ſpread upon the membrane that covers the Foramen Narium, then growing into a ſmall thin tendon, it's reflected about the hook-like proceſs of the inner Ala of the Proceſſus pterigoides; but ſoon turning into a narrow and thin fleſhy belly, it runs cloſe along the inſide of the Muſculus pterigoidæus internus, and Origin.

Is inſerted carnous into all the membranous, fleſhy and cartilaginous part of the tube. Inſertion.

Its uſe is to dilate and keep open this channel, as Vaſalva firſt has moſt ingeniouſly taken notice. Uſe.

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† Circumflexus Palati. Albin.
Le Sphæno-ſalpingo-ſtaphylin. Winſl.

*Long before the excellent treatiſe of this author fell into my hands, I demonſtrated a muſcle ſomething analogous to this in a dog, which I name with reſpect to its origin, progreſs and termination,*

### TYMPANO-PETROSO-SALPINGO-PTERIGO-PALATINUS

*Ariſes from the Os petroſum within the cavity of the Tympanum, or barrel oppoſite to the Muſculus ovalis, and going out by the ſide of the Ductus a Palato ad Aurem, to the membranous and fleſhy part of which it firmly adheres, becomes carnous, and continues ſo, till it arrives at the ſharp wing-like proceſs of the Os ſphænoidale, where it grows tendinous; and, being reflected over the ſame, its fibres are again dilated and expanded over the membrane that covers the ſlits, or Foramina Narium, where it ſeems to join with its fellow on the other ſide.*

*The uſe of this muſcle, is to compreſs the palatine glands that lie above it in great cluſters and heaps, by pulling up the membrane, which is a very uſeful contrivance to forward the ſecretion of their ſalival juices,* *that are of ſo great uſe in time of maſtication for ſoftening the hard bones, and ſuch like ſubſtances as this animal uſually feeds upon, and farther for promoting their diſſolution in the ſtomach; beſides, it may alſo be ſubſervient to the dilatation of the Euſtachian Tube.*

N. B In my humble opinion, with all ſubmiſſion to the better judgment of others, the Muſculus Tubæ novus may well be divided into two diſtinct muſcles, as upon occaſion I think I can very eaſily demonſtrate. The firſt I bring broad and tendinous from the Os Palati, and fix its termination into the tube of the ear, which it ſerves to dilate. The other, which is much ſmaller, ſeems to derive its origin from the Apex of the bony part of the foreſaid tube: in its aſcent it cloſely adheres to the firſt, but at the hook-like proceſs of the bone its ſmall tendon departs from it, and growing broad and thin, is ſoon ſpread upon the Membrana Faucium, above the Foramina Narium, at the ſides of the Uvula. Its uſe being, when it acts with its partner, to antagonize the Thyreo-ſtaphilinus.

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## CHAP. XVIII.

### Of the muſcles of the HEAD, appearing or ſituate in the fore and lateral part of the NECK.

THE head has twelve muſcles on each ſide; five offer themſelves to be deſcribed in this poſition of the body; the reſt appearing when the ſubject lies prone.

### MASTOIDÆUS *

Origin. ARISES tendinous, and ſometimes a little fleſhy, from the upper part of the Os Pectoris, and carnous from near one half of the Clavicula next it.

Inſertion. Is inſerted by a thick and ſtrong tendon into the point or forepart of the Proceſſus

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* Le Maſtoidien anterieur, ou Sterno-cleido-maſtoidien. Winſl.

Sterno-maſtoidæus una cum cleido-maſtoidæo. Albin.

Proceſſus maſtoidæus, and by a broad and thin tendinous expanſion running obliquely upwards and backwards into the reſt of that proceſs, and the adjacent part of the Os petroſum externally, hard by the Lambdoidal Suture. When this acts, the head is turned to the oppoſite ſide, and when both act together, they bend the head forwards. Uſe.

*In a dog it ariſes by an acute tendineo-carnous beginning from the upper part of the Os Pectoris, and growing into a thick and fleſhy belly continues united with its fellow half way up the Trachæa; then receding from one another, each marches obliquely to its double termination, one by a round tendon into the edge of a cavity made behind the bony part of the Meatus Auditorius, the other by a broad, thin and membranous tendon into the lateral part of the Os Occipitis.*

### RECTUS INTERNUS MAJOR *

ARISES from the anterior points of the tranſverſe proceſſes of the third, fourth, fifth and ſixth Vertebra of the neck, Origin.

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* Le Droit anterieur long. Winſl.

neck, by ſo many double tendons, which ſoon become fleſhy.

Inſertion. Is inſerted into the anterior proceſs of the Os Occipitis, near its conjunction with the Os ſphænoides.

Uſe. Its uſe is to bend the head forwards.

*In a dog it ariſes tendineo-carnous from the fore and internal part of all the tranſverſe proceſſes of the neck, except that of the firſt, on the inſide of which it is reflected in its aſcent to the head, where it terminates in a little dimple made in the occipital bone.*

### RECTUS INTERNUS MINOR, Cowp. *

Origin. ARISES fleſhy from the fore part of the body of the firſt Vertebra Colli.

Inſertion. Is inſerted near the root of the Condiloide proceſs of the Occiput under the former.

Uſe. Its uſe is to nod the head forwards.

### RECTUS LATERALIS, Fallop. §

Origin. ARISES fleſhy from the tranſverſe proceſs of the firſt Vertebra Colli.

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* Le Droit anterieur court. Winſl.

§ Le premier tranſverſair anterieur. Winſl.

Is inſerted partly into the Os Occipitis, and partly into the Os Temporis, near the Proceſſus mamillaris. Inſertion.

Its uſe is to nod or bend the head a little to one ſide. Uſe.

MUSCULUS CAPUT CONCUTIENS *

ARISES fleſhy from the oblique proceſs of the ſecond and third Vertebra Colli, and aſcending obliquely backwards, Origin.

Is inſerted near the root of the tranſverſe proceſs of the firſt Vertebra. Inſertion.

Its uſe is to ſhake the head; for the firſt Vertebra being thereby pulled to one ſide, the head muſt of neceſſity obey that motion by virtue of its articulation with the ſame. Uſe.

*In a dog it is yet much more conſpicuous, ariſing by two fleſhy heads from the forepart of the oblique proceſs of the ſecond Vertebra Colli, and by one from the third, which uniting aſcend obliquely, and terminate into the*

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* Le ſecond tranverſaire anterieur. Winſl. Sextus intertranſvers. Prior. Colli. Albin.

*the tranſverſe proceſs of the firſt, between the Levator Scapulæ major and the Obliquus inferior.*

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## C H A P. XIX.

## Of the muſcles of the NECK, that lie on its fore part.

THE neck or Collum has ſix muſcles on each ſide, which I diſtinguiſh into common and proper: the proper are ſuch whoſe uſe is confined to the Vertebræ of the neck only, as the Interſpinales, the Intertranſverſales, and the Intervertebrales; the common are equally ſubſervient to the motions of the neck and head. Of all theſe there is only one pair that appear in this poſture of the body.

### LONGUS

Origin. ARISES tendineo-carnous from the bodies of the four or five ſuperior Vertebræ of the Thorax laterally.

Inſertion. Is inſerted into the forepart of the four lowermoſt Vertebræ of the neck by ſo many ſmall tendons covered over with fleſh, into the third Vertebra by a ſmall tendon, into the ſecond by a very long and broad one, and into the firſt by one that is rounder, but not ſo large, being fleſhy on both ſides; it alſo faſtened to ſome of the tranſverſe proceſſes of the neck near their roots by ſmall tendons.

Its uſe is to bend the neck to one ſide, but if both act to bring it directly forwards. Uſe.

*In a dog it appears as if it were divided into as many diſtinct muſcles by tendinous lines as there are Vertebræ in the neck.*

N. B. The Scaleni belong to the Thorax.

## CHAP. XX.

## Of the muſcles of the lower Jaw.

THE Maxilla inferior has five pair of proper muſcles, and one pair common to it, with the cheeks, &c. viz. The Quadratus Genæ, called by

Galen, Platuſma myoides, already deſcribed.

## TEMPORALIS *

Origin. ARISES fleſhy from the anterior and lower part of the parietal bone laterally, from all the Pars ſquammoſa of the temple-bone, from a little riſing in the lateral part of the Os Frontis, and from the external part of its proceſs, from part of the Os Mali internally adjoining to it, and from the upper part of the lateral proceſs of the ſphænoidal bone; from theſe diſtant origins its fleſhy fibres tend towards the Os jugale, under which they paſs.

Inſertion. Is inſerted tendinous into the upper part of the Proceſſus coronæ, in the duplicature of which tendon this Proceſſus is incloſed as in a ſheath, being continued down all its fore part to near the laſt Dens molaris, and tendinous and fleſhy into the poſterior part of this proceſs, as far back as its neck.

Uſe. Its uſe is to pull the lower Jaw upwards.

N. B. The

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* Le Crotaphite. Winſl.

N. B. The Crotaphite, or temporal muſcle, is covered with a particular tendinous membrane, that ſprings from the bones, which give origin to the upper and ſemicircular part of this muſcle, and paſſing over the ſame, contracts like it, and is inſerted into all the Os jugale, and the adjoining part of the Os Frontis. Its uſe is to fortify this muſcle in its action, by bracing it down at that time. When this membrane is removed, we meet with a few thin fleſhy fibres, which terminate in the broad middle tendon of the muſcle juſt as it paſſes under the yoke bone. The under ſide of this tendon, which appears as if it were compoſed of ſeveral ſmall ones cloſely conjoined, is lined as it were by a great many more fleſhy fibres to prevent its being injured by the hardneſs or roughneſs of the ſubjacent bones. It runs down the two edges of a Sulcus in the forepart of the Proceſſus coronæ tendinous and fleſhy.

I have ſeveral obſervations relating to the ſtructure of this muſcle, which I deſign to communicate, with many more, on a proper occaſion.

*In a dog it is a very thick and ſtrong muſcle, to the bulk of which the bigneſs of its head is much owing. It ariſes fleſhy from the knob of the Occiput, the ridge or eminence between the two parietal bones, and ſome part of the Os Frontis, adhering to the cartilaginous ligament that fences the upper part of the orbit, the bone being here diſcontinued.*

### MASSETER

Origin. ARISES by three tendinous and fleſhy heads, which run in different directions. The firſt comes from the Os maxillare, where it joins the Os Mali, and from all the edge of the laſt named bone, which makes the ball of the cheek. The ſecond

Springs from the proceſs of that bone, and the anterior part of the Apophyſis of the Os ſquammoſum ; the fibres of theſe two beginnings interſect one another. The third head

Ariſes from all the inner edge of the Os jugale, being eaſily ſeparated from its other beginnings. The firſt two heads are

Inſertion. Inſerted into the inferior and external part of the lower jaw, from the angle to near its middle. The laſt head runs down ſtraight, and is inſerted tendineo-carnous into all the outſide of the Proceſſus Coronæ, and the neck of the lower jaw,

Uſe. Its uſe is to pull the jaw upwards, and by reaſon of the above mentioned decuſſation, to move it backwards and forwards, for the better chewing and grinding of the meat.

*In a dog it ariſes from moſt part of the Os jugale, and by a ſtrong tendon from a protuberance in the Maxilla ſuperior, a little above the laſt Dens molaris ſave one, Is inſerted into a ſharp proceſs on the angle of the lower jaw below the condyle.*

### DIGASTRICUS *

Origin. ARISES tendineo-carnous from the ſides of a conſiderable Sulcus excavated

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* Biventer Maxillæ. Albin.

near the root of the Maſtoidal proceſs internally; its middle tendon ſometimes paſſes through the Stylo-hyoidæus, but always through a ligament that comes from the Os hyoides, to which bone it is alſo faſtened by tendinous fibres.

Inſertion. Is inſerted tendinous and fleſhy into the edge of the lower jaw, near its Commiſſure, above the Mylo-hyoidæus.

Uſe. Its uſe is to pull the lower jaw downwards, being aſſiſted by the Latiſſimus Colli when both act; but when one only is contracted, the Maxilla is moved outwardly to one ſide.

*In a dog it has but one belly, which is very thick and large, ariſing fleſhy, interſperſed with tendinous fibres from an acute bony proceſs between the Proceſſus mamillaris and the condyle of the Occiput; and terminates about the middle of the Maxilla by a large inſertion.*

### PTERIGOIDÆUS INTERNUS *

Origin. ARISES by tendinous and fleſhy fibres from the inner and upper part of the largeſt wing of the pterigoidal proceſs, poſſeſſing all that ſpace or cavity between the two wings; beſides, it has a ſecond origin from that part of the Os Palati that is engaged between theſe two Alæ.

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* Le grand Pterigoidien. Winſl.

Inſertion. Is inſerted into the inferior part of the lower jaw, near its angle internally.

Uſe. Its uſe is to draw the jaw to one ſide, but if both act in concert, they muſt aſſiſt the temporal muſcle in drawing it up.

PTERIGOIDÆUS EXTERNUS * Fall.

Origin. ARISES by two diſtinct beginnings, one tendineo-carnous from the edge of the external or broadeſt wing of the Proceſſus pterigoides, and from part of the Os maxillare adjoining to it. The other is fleſhy from two or three aſperities in the lateral proceſs of the Os ſphænoidale, near the ſlit that tranſmits the blood veſſels, &c. to the eye; as alſo from part of the Os ſquammoſum

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* Le petit pterigoidien. Winſl.

ſum near the cavity that receives the condyle of the jaw.

Inſertion. Is inſerted into a cavity in the neck of the Proceſſus Condyloides internally, ſome of its fibres running up upon the membrane that faſtens the moving cartilage to the ſaid bone.

N. B. This moveable cartilage receives in like manner ſome fleſhy fibres from the temporal and maſſeter muſcles.

Uſe. Its uſe is to pull the lower jaw forwards, and thruſt the teeth out beyond thoſe of the upper jaw.

*Becauſe in a dog theſe two pterigoidal muſcles do both ariſe from the ſame ſide of the Proceſſus aliformis, I chooſe to call the firſt Major, and the ſecond or laſt deſcribed Minor, with reſpect to their different bigneſs.*

## CHAP. XXI.

### Of the muſcles of the THORAX, that appear on its fore part, the body lying ſupine.

RESPIRATION conſiſts in the alternate dilatation and contraction of the cavity of the thorax or cheſt, which two neceſſary motions are chiefly performed by thirteen pair of muſcles, of which ſome dilate and widen the Thorax, by pulling the ribs upwards and outwards in inſpiration for the reception of the air into the lungs, others contract and narrow its capacity, by pulling them downwards for the expulſion of the air from the lungs; and again, ſome aſſiſt in both theſe actions, as the Diaphragm does.

### SCALENUS.

This may be divided into four diſtinct muſcles. The firſt *, or that next the Origin.

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* Scalenus prior. Albin.

La portion anterieure du premiere Scalene. Winſl.

the gullet, ariſes tendinous from the fourth, fifth, and ſixth tranſverſe proceſs of the neck, and

Inſertion. Is inſerted tendineo-carnous into the upper ſide of the firſt rib, near its cartilage.

Origin. The ſecond * ariſes from the ſecond, third, fourth, fifth, and ſixth tranſverſe proceſs of the neck by ſo many tendons, and

Inſertion. Terminates into the firſt rib, ſome part of it being expanded over the fourth Scalenus.

Origin. The third † ariſes from the fifth and ſixth tranſverſe proceſs of the neck, and

Inſertion. Is inſerted into the upper edge of the ſecond rib.

The

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* Scalenus medius. Albin.

La portion poſterieure du premier Scalene. Winſl.

† Scalenus poſticus. Albin.

La portion poſterieure du ſecond Scalene. Winſl.

The fourth * comes from the ſixth and ſeventh tranſverſe proceſs of the neck. Origin.

Is inſerted into the firſt rib, near its articulation with the Vertebra. Inſertion.

They all aſſiſt in the elevation of the ribs, and widening of the cheſt. Uſe,

*Theſe muſcles in a dog differ from the human in their number and inſertions; for there are but three of them, and the inſertion of the firſt, or innermoſt, is into the firſt rib; that of the ſecond or middlemoſt, which is broad, fleſhy and thin, is into the fifth or ſixth rib, counting from above downwards.*

N. B. What Galen, Veſalius, and others, reckoned as the upper part or inſertion of the Rectus Abdominis in apes, monkeys, dogs, &c. I have diſcovered to be a very diſtinct muſcle, which ariſes fleſhy from the firſt rib, and turning tendinous, is inſerted into the Os Pectoris, under the tendon of the Rectus, the fibres of which are obſerved to interſect one another. I call it, Muſculus in ſummo Thorace ſitus.

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* N. B. The fourth Scalenus of Douglas is deſcribed as one of the Levatores Coſtarum by Albinus and Winſlow.

## SUBCLAVIUS

Origin. ARISES tendinous from the Clavicula, juſt by its connexion with the upper part of the Proceſſus coracoides Scapulæ, as alſo from the root of that proceſs, cloſely adhering to the ligament that runs between it and the Clavicula. It ſoon becomes fleſhy, and adheres to all the inferior part of that bone, near the extremity of which it runs off obliquely, and growing tendinous,

Inſertion. Is inſerted into the ſuperior part of the firſt rib, near the ligament that connects the Clavicle to the ſame.

Uſe. Its uſe is to pull the firſt rib upwards.

*This is wanting in a dog.*

## INTERCOSTALES

Origin. ARISE from the lower edge of each ſuperior rib, and

Terminate

Inſertion.

Terminate in the upper edge of each inferior rib; that is, the Externi run obliquely from the back part forward, and the Interni from the fore part backwards, their fibres interſecting one another, not unlike the two ſtrokes of the letter X.

Uſe.

They both ſerve to dilate the capacity of the Thorax *.

### TRIANGULARIS †

Origin.

ARISES fleſhy and a little tendinous from all the length of the Cartilago enſiformis laterally, and from the edge of the lower part of the Os Pectoris, from whence its fibres aſcend obliquely upwards and outwards.

Inſertion

Is inſerted into the cartilaginous endings of the fifth, fourth, and third true

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* N. B. The internal Intercoſtals are deficient between the ſpine and the angle of the ribs, and the external are wanting near the Sternum. See a reaſon given for this by the ingenious Dr. Monro, in vol. i. art. xx. of Eſſays and Obſervations phyſical and literary.

† Les Sterno-coſtaux communement le Triangulaire du Sternum. Winſl.

ribs near their conjunction with the bones.

Uſe. Its uſe is to contract the cavity of the Thorax, by depreſſing the cartilaginous part of theſe ribs.

*In a dog this pair of muſcles is much larger than in man; and it is not improbable, that in this animal the diſcharge of part of the ſuperfluous Serum of the blood (carried off in man by the excretory ducts of the miliary cutaneous glands, which a dog is deſtitute of) by Halitus, or by a more plentiful ſecretion in their ſalival glands, may be much promoted by the joint action of theſe muſcles; for we may obſerve, after a great fatigue, or any accelerated motion of the blood, while this creature lies or runs with its tongue lolling out, and breathes prodigious faſt, there is a great deal of ſaliva ſeparated.*

## DIAPHRAGMA

Is made up of two muſcles. The Superior

Origin. ARISES by two fleſhy beginnings from the extremity of the Cartilago enſiformis laterally, from part of the cartilages of the ſeventh rib, and from the lower edge of the cartilaginous endings of all the inferior ribs, and the bony part of the laſt. The fibres from the Cartilago enſiformis are carried ſtraight down, whereas all thoſe from the ribs run obliquely inwards. The inferior muſcle

Origin.

ARISES on each ſide of the Vertebræ Lumborum by the following diſtinct beginnings.

1. Is fleſhy from the ſide of the firſt Vertebra of the loins.

2. Is tendinous from the fore part of the ſecond, third, and ſometimes fourth Vertebra. This tendon is almoſt inſeparable from ſome part of its fellow on the other ſide.

3. Is tendineo-carnous from the ſide of the ſecond Vertebra, and often from the third alſo, eſpecially on one ſide.

4. Its fourth origin is by a thin tendon from the root of the tranſverſe proceſs of the ſecond Vertebra Lumborum,

between this and the laſt rib the Triangularis runs up to its termination.

Both theſe muſcles join in a middle tendon. The midriff is perforated in its tendinous part by the aſcending Vena Cava, and in the fleſhy part of the ſuperior muſcle by the deſcending Gula, and Par vagum. Between its two tendinous productions, as they call them, the great artery deſcends, and the Ductus Thoracicus aſcends from the receptaculum Chyli. Between theſe tendons on each ſide, and the body of the firſt Vertebra Lumborum laterally, there is a fiſſure through which the Intercoſtal Nerves deſcend, and the Vena azygos proceeding from the Cava below the Emulgent, aſcends on the right ſide. Between its adheſion to the ſide of this Vertebra and its tranſverſe proceſs, it makes as it were an arch with a tendinous border, under which the upper part of the Pſoas comes from the laſt Vertebra Dorſi, and the tendon of the Quadratus Lumborum paſſes that way to its termination there.

In inſpiration its ſuperior ſurface is contracted, and becomes more plain, whereby the cavity of the Thorax is enlarged to give more liberty to the lungs to receive the air, and the Viſcera of the Abdomen are compreſſed for the diſtribution of the chyle, &c. In expiration its ſurface is convex towards the Thorax, whereby its cavity is leſſened, and the air expelled out of the lungs. Uſe

*In a dog the inferior muſcle of the Diaphragm ariſes by four tendons, two ſhort and two long.*

## COSTARUM DEPRESSORES PROPRII Cowperi *

ARISE tendinous from the upper part of the rib near its juncture with the tranſverſe proceſs of the Vertebra, but ſoon ſpreading into a broad and thin fleſhy belly, they march obliquely upwards under the Pleura over one rib, and terminate into that next above it; in number they are ten, being expanded Origin. Inſertion.

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* Les Sous-coſtaux. Winſl.
Intercoſtalium internarum partes. Albin.

all over the inſide of the ribs from the back to near the middle.

Uſe. Their uſe is to depreſs the ribs. Mr. Cowper diſcovered theſe muſcles ſome time ago, and having favoured me with his obſervation, I have named them, as above, from their uſe.

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## CHAP. XXII.

## Of the muſcles of the BLADDER of URINE.

THE Veſica Urinaria has two muſcles.

### SPHINCTER

Is only a few ſmall orbicular fleſhy fibres, placed under the external coat of the bladder round its neck.

### DETRUSOR URINÆ.

This muſcle is only the ſecond coat of the bladder, compoſed of muſcular fibres, which run in different directions, upon the contraction of which the neck of the bladder opens, and the urine is forcibly ſqueezed out.

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## C H A P. XXIII.

## Of the muſcles of the ANUS.

THE extremity of the Inteſtinum rectum, called Anus and Podex, is provided with five muſcles, two pair called Levatores, and a ſingle one, which is its Sphincter.

LEVATOR MAGNUS, ſeu INTERNUS, *

ARISES from the Os Pubis between its juncture and the hole common to it with the Iſchion, from the tendon that covers the Marſupialis, and from the acute proceſs of the laſt named bone; between which and the lower part of the Os Coccygis it adheres to the Muſculus Coccygæus, being both covered with one membrane. From this large beginning its fibres contract as it deſcends over the Marſupialis, having its ſurface, Origin.

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* Levator Ani. Albin. & Winſl.

ſurface, which reſpects the cavity of the Abdomen, all covered with a tendinous membrane and uniting with its fellow on the back of the Inteſtinum rectum, which they cover on all ſides, except where the Proſtrates and bulb of the Urethra adhere to it.

Inſertion. Is inſerted into the Sphincter, its upper part being firmly annexed to the Os Coccygis.

Uſe. Its uſe is to draw the Anus upwards after the evacuation of the excrements, and in ſome meaſure to ſhut it alſo ; at other times it keeps this gut from falling too low, which always happens in a relaxation of its fibres in a palſy.

*In a dog, before it terminates, it appears divided into three or four portions, one of which on each ſide leaves the Rectum, and is inſerted into the Cauda, which it depreſſes after the animal has thruſt out its excrements.*

LEVATOR

### LEVATOR PARVUS, ſeu EXTERNUS, Riol. *

ARISES tendinous and fleſhy from the protuberance or knob of the Iſchium, from whence it runs tranſverſely to its termination into the Sphincter Ani, near the bulb of the Urethra. Origin. Inſertion.

Its uſe is to aſſiſt the former. Uſe.

*This is wanting in a dog.*

### SPHINCTER.

The Anus has two Sphincters; the firſt may be called Externus or Cutaneus, which ſurrounds the Podex about the breadth of one inch, being placed immediately between the ſkin and the fat. The ſecond is named Internus and Vaginalis, whoſe fleſhy fibres encompaſs the lower end of the Inteſtinum rectum, to the breadth of about an inch, being forwards connected to the Accelerator Urinæ, and backwards to the Levator major. Inſertion.

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* Tranſverſus Penis.
Tranſverſus Perinæi. Albin.
Le Tranſverſale de l'Urethre. Winſl.

Uſe. Its uſe is to hinder the involuntary excretion of the Fæces, by ſhutting up or cloſing the paſſage of the Rectum.

*In a dog its circular fibres do not embrace the extremity of the Rectum ſo high as in man, and the reaſon of it is plain, becauſe the preſſure and weight of the Fæces Alvinæ is not ſo great on this part in a dog, the poſition of its body being prone, or horizontal, as it muſt be in man, whoſe poſture is erect.*

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## CHAP. XXIV.

## Of the muſcles of the SCAPULA.

THE ſhoulder-blade is moved by three pair of proper muſcles, and two pair common to it with the Thorax, viz. the Serratus major Anticus, and Serratus minor Anticus.

### TRAPEZIUS, ſeu CUCULLARIS,

Origin. ARISES by a thick and ſhort tendon from the lower part of a protuberance in the occipital bone backwards, and from the rough line that is extended from thence towards the Proceſſus mammillaris by a thin membranous tendon, which covers ſome part of the Complexus and Splenius; beſides, it ariſes tendinous from the ſpine of the laſt Vertebra of the neck, and from all the ſpines of the back, except the two lowermoſt.

Inſertion. Is inſerted fleſhy into the broad and poſterior part of the Clavicula, tendineo-carnous into one half of the Acromion, and into almoſt all the ſpine of the Scapula.

Uſe. According to the three directions of its fibres it moves the Scapula variouſly, for its ſtraight ones draw it directly backward, its obliquely deſcending pull it obliquely upward, and its obliquely aſcending bring it obliquely downwards and backwards.

N. B. Galen divides the Trapezius into two muſcles, viz. the ſuperior and the inferior. The firſt he calls Trapezia, and to the ſecond later anatomiſts have given the name of Cuculla, from whence they are both commonly denominated

Cucullares. The inferior part of this muſcle grows a little tendinous before it is inſerted into the back part of the Spina Scapulæ; its upper part from the Os Occipitis to the ſpinal proceſs of the laſt Vertebra Colli, is inſeparably united to its fellow of the other ſide.

*In a dog its ſuperior origin comes from all the Ligamentum Colli that is below the riſe of the Levator humeri proprius; that part of it which reſembles the Cuculla ſprings from about the middle of the Vertebræ of the back; that ſeries of fibres which pulls the Scapula directly backwards unites with the upper triangular part of this muſcle by a thin tendon.*

*The clavicle being wanting in a dog, it has no inſertion there.*

### ELEVATOR, ſeu MUSCULUS PATIENTIÆ, *

Origin. ARISES fleſhy from the firſt, ſecond third, and ſometimes fourth tranſverſe proceſſes of the Vertebræ Colli by ſo many diſtinct ſlips, which ſoon afterwards do all unite.

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* L'Angulaire ou Releveur propre. Winſl.

Is inſerted fleſhy into that part of the Baſis Scapulæ that is between its ſpine and ſuperior angle. Inſertion.

Its uſe is to pull the Scapula upwards and a little forwards. Uſe.

*The elevation of this part in a dog is performed by two muſcles, viz.*

*Levator major, vel anterior, Ariſes fleſhy from the broad tranſverſe proceſs of the firſt Vertebra Colli. Is inſerted in the upper part of the Spina Scapulæ, near its extremity, which makes the Acromion in man.*

*Levator Scapulæ minor, vel poſterior, Ariſes tendinous from the Occiput, near its ridge, and deſcending cloſe by the long portion of the Rhomboides, is inſerted by a ſmall tendon into the baſis of that bone, near its upper angle.*

### RHOMBOIDES.

This muſcle I find always divided into two diſtinct fleſhy portions, joined by an intervening membrane. The uppermoſt *, which is the leaſt, ariſes tendinous from the laſt ſpinal proceſs of Origin.

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* Romboïdeus minor. Alb.

of the neck, and ſome part of the Ligamentum Colli next above it; the inferior part of this muſcle * ariſes tendinous from the ſpines of the four or five ſuperior Vertebræ Dorſi. The upper

Inſertion. part terminates into the baſis of the Scapula, partly above, but chiefly below its Spine; and the inferior part is inſerted into almoſt all the remaining part of the baſis.

Uſe. Its uſe is to draw the Scapula obliquely upwards, and directly backwards.

*In a dog it ariſes fleſhy from all the Ligamentum Colli, which growing broader as it deſcends, unites with that portion coming from the ſpines of the back, near the upper angle of the Scapula.*

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* Romboïdeus major. Ablin.

C H A P.

## CHAP. XXV.

## Of the muſcles of the THORAX, that appear in diſſection, the body lying prone.

IN the deſcription of the Muſculi Thoracis, which appear on its fore-part, I forgot to premiſe their diviſion into proper and common. The uſe of the firſt is confined only to the cheſt, but the latter are ſubſervient to other parts, as well as it. Thus the Serrati Antici contribute to the motions of the Scapulæ, the Sacro-lumbi to the extenſion of the back, and the Scaleni move the neck towards the ſhoulder or firſt rib.

### SERRATUS MAJOR ANTICUS *

ARISES fleſhy from the whole baſis of the Scapula internally, between the inſertion of the Rhomboides, and the origin of the Subſcapularis, being folded as Origin.

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* Serratus magnus. Albin. & Winſl.

as it were about the two angles of the Scapula.

Inſertion. Is inſerted into the eight ſuperior ribs by an equal number of fleſhy Digituli.

Uſe. Its uſe is to dilate the Thorax, by pulling up the ribs, and according to ſome, to move the Scapula, into which (they alledge) it is inſerted, forwards and downwards.

*In a dog it ariſes fleſhy from the five inferior tranſverſe proceſſes of the Vertebræ Colli by ſo many different heads, and tendineo-carnous from the ſeven ſuperior ribs. The firſt, or uppermoſt order of its fibres, run obliquely downwards to their inſertion into part of the Baſis Scapulæ internally. The ſecond order that comes from the ribs aſcend obliquely, and are implanted not only into the Baſis Scapulæ, but alſo broad and fleſhy into part of its concave ſide. Its uſe in this animal is peculiar to the Scapula, which it moves according to the various direction of its fibres; and beſides, it keeps the ſhoulder-blade from ſtarting out, or riſing up too high, when this animal ſtands or runs.*

SERRATUS

### SERRATUS MINOR ANTICUS *

ARISES tendinous from the Proceſſus coracoides Scapulæ, but ſoon grows fleſhy and broad. Origin.

Is inſerted tendineo-carnous into the lower edge of the bony part of the third, fourth and fifth rib. Inſertion

Its uſe is either to aſſiſt the former, or to draw the Scapula forwards. Uſe.

*This is wanting in a dog.*

### SERRATUS SUPERIOR POSTICUS

ARISES by a broad and thin tendon, from the lower part of the Ligamentum Colli, or rather from the tendinous union of the Splenii, from the acute proceſs of the laſt Vertebra of the neck, and from two or three of the uppermoſt of the back. Origin.

Is inſerted into the ſecond, third and fourth ribs by as many particular fleſhy ſlips. Inſertion

Its uſe is to expand the Thorax in the elevation of the ribs. Uſe.

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* Serratus Anticus. Albin.
Le petit Pectoral. Winſl.

as it were about the two angles of the Scapula.

Inſertion. Is inſerted into the eight ſuperior ribs by an equal number of fleſhy Digituli.

Uſe. Its uſe is to dilate the Thorax, by pulling up the ribs, and according to ſome, to move the Scapula, into which (they alledge) it is inſerted, forwards and downwards.

*In a dog it ariſes fleſhy from the five inferior tranſverſe proceſſes of the Vertebræ Colli by ſo many different heads, and tendineo-carnous from the ſeven ſuperior ribs. The firſt, or uppermoſt order of its fibres, run obliquely downwards to their inſertion into part of the Baſis Scapulæ internally. The ſecond order that comes from the ribs aſcend obliquely, and are implanted not only into the Baſis Scapulæ, but alſo broad and fleſhy into part of its concave ſide. Its uſe in this animal is peculiar to the Scapula, which it moves according to the various direction of its fibres; and beſides, it keeps the ſhoulder-blade from ſtarting out, or riſing up too high, when this animal ſtands or runs.*

### SERRATUS MINOR ANTICUS *

ARISES tendinous from the Proceſſus coracoides Scapulæ, but ſoon grows fleſhy and broad. Origin.

Is inſerted tendineo-carnous into the lower edge of the bony part of the third, fourth and fifth rib. Inſertion.

Its uſe is either to aſſiſt the former, or to draw the Scapula forwards. Uſe.

*This is wanting in a dog.*

### SERRATUS SUPERIOR POSTICUS

ARISES by a broad and thin tendon, from the lower part of the Ligamentum Colli, or rather from the tendinous union of the Splenii, from the acute proceſs of the laſt Vertebra of the neck, and from two or three of the uppermoſt of the back. Origin.

Is inſerted into the ſecond, third and fourth ribs by as many particular fleſhy ſlips. Inſertion.

Its uſe is to expand the Thorax in the elevation of the ribs. Uſe.

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* Serratus Anticus. Albin.
Le petit Pectoral. Winſl.

### SERRATUS INFERIOR POSTICUS

Origin. ARISES by a broad thin tendon from the ſpinal proceſſes of the two inferior Vertebræ of the back, and from as many or more of the ſuperior of the loins.

Inſertion. Is inſerted fleſhy into the lower edge of the three or four inferior ribs, tho' ſeldom into the laſt, but at a greater diſtance from the Obliquus Abdominis externus, than will admit of any indentation between thoſe two muſcles.

Uſe. Its uſe is to depreſs ſo many of the ribs, or at leaſt to accelerate their motion downwards,

*In a dog the Serratus ſuperior poſticus ariſes by a thin tendon from the lower part of the Ligamentum Colli, its laſt acute proceſs, and from the eight ſuperior proceſſes of the back. Its inſertion is into the nine upper moſt ribs, excepting the firſt, by ſo many diſtinct fleſhy Digituli. Its tendon joins in with that of the Serratus inferior poſticus, and ſo makes as it were a ſtrong tendinous bandage, which keeping the ſubjacent muſcles very*

*very cloſe together, does vaſtly ſtrengthen them in their actions.*

### SACRO-LUMBALIS

ARISES outwardly tendinous, and inwardly fleſhy, in common with the Longiſſimus Dorſi, from the ſingle uppermoſt ſpines of the Os ſacrum, from the poſterior part of the ſpine of the Ilium, from the inferior ſpines of the Vertebræ Lumborum, and by ſmall tendons from near the roots of their tranſverſe proceſſes. Origin.

Is inſerted by as many long and thin tendons as there are ribs, each of which terminates into the third rib, where it begins to be curved, above its parting from the body of the muſcle, only its uppermoſt and laſt tendon ends in the tranſverſe proceſs of the ſeventh Vertebra Colli. Inſertion.

Its uſe is to pull the ribs down. Uſe.

N. B. From the upper part of the ſix or ſeven lower ribs ariſe ſo many ſmall bundles of thin, tendinous and fleſhy fibres, which, after a very ſhort progreſs, terminate in the inner ſide of this muſcle. Steno calls them Muſculi ad Sacro-lumbum Acceſſorii.

CERVICALIS DESCENDENS Diemerbr.*

Origin. ARISES fleſhy from the third, fourth, fifth and ſixth tranſverſe proceſs of the Vertebræ Colli, and

Inſertion. Is inſerted into the third, fourth, fifth, ſixth and ſeventh rib, between the Sacro-lumbalis and the Longiſſimus Dorſi.

Uſe. Its uſe is to draw the ribs upwards in the act of inſpiration.

COSTARUM LEVATORES Stenon.†

Which I name Levatores Proprii, to diſtinguiſh them from the other muſcles that perform the ſame office: they

Origin. ARISE tendinous and fleſhy from the tranſverſe proceſſes of the Vertebræ of the back, whence being carried obliquely forwards, they ſoon terminate in

Inſertion. the upper ſide of all the ribs, except the firſt.

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* Le tranſverſaire grele, ou tranſverſaire collateral du Col. Winſl.

† Les Sur-coſtaux. Winſl.

Their uſe is to lift up the ribs, and dilate the cheſt, which they do moſt effectually, becauſe the proceſſes of the Vertebræ ſerve as a Fulcimen to their motion. Uſe.

## CHAP. XXVI.

## Of the muſcles of the HEAD, that appear in the prone poſition of the body.

### SPLENIUS *

ARISES by a great many long and thin tendons from the five ſuperior ſpinal proceſſes of the Vertebræ of the back, tendinous and fleſhy from the laſt of the neck, and entirely tendinous from the Ligamentum Colli; or rather the tendons of the two Splenii unite here inſeparably, only about the ſecond Vertebra of the neck they recede from one Origin.

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* Le Splenius ou Maſtoidien poſterieure. Winſl.

N. B. Albinus divides this muſcle into two, viz. Splenius Capitis & Splenius Colli.

one another, ſo that part of the ſubjacent muſcle may be ſeen.

Inſertion. Is inſerted by one tendon into the tranſverſe proceſs of the ſecond Vertebra Colli; and by two, for the moſt part, into that of the firſt; and tendineo-carnous into the under and forepart of the Proceſſus mammillaris, from whence it is carried backwards on the Occiput.

Uſe. Its uſe is to bring the head backwards laterally; but when both act, to pull the head directly backwards.

*In a dog it terminates in the tranſverſe proceſs of the firſt Vertebra Colli, and into the poſterior and lateral part of the occipital bone. Backwards it is intimately conjoined with its fellow of the other ſide, from the ſharp proceſs of the laſt Vertebra Colli to the Occiput, from which commiſſure, or joining, there runs down a thin tranſparent membrane to all the Ligamentum Colli.*

TRACHELO

### TRACHELO MASTOIDÆUS, ſeu CAPITIS PAR TERTIUM, Fallop. *

ARISES from the tranſverſe proceſs of the firſt and ſecond Vertebræ Dorſi, and from the three or four lowermoſt of the neck, by ſo many thin tendons, which uniting form a pretty thick fleſhy belly, that runs up under the Splenius, and Origin.

Is inſerted into the middle of the backſide of the Proceſſus maſtoidæus by a thin tendon. Inſertion.

Its uſe is to aſſiſt the Complexus. Uſe.

N. B. This muſcle often receives a roundiſh fleſhy ſlip from the Longiſſimus Dorſi.

*In a dog it is inſeparably united with the tendon of the Splenius, at its termination in the Occiput.*

COMPLEXUS

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* Le petit Complexus, ou Maſtoidien lateral.

## COMPLEXUS*

Origin. ARISES tendinous and fleſhy from the ſix or ſeven ſuperior tranſverſe proceſſes of the Vertebræ of the back, and from all thoſe of the neck, except that of the firſt, by ſo many diſtinct beginnings; in its aſcent it adheres to the ſpinal proceſs of the laſt Vertebra Colli, and to the ligament that runs from thence to the ſecond Vertebra, where it leaves its fellow of the other ſide, and runs off obliquely forwards to its termination.

Inſertion. Is inſerted fleſhy into the Os Occipitis, between the upper part of the Obliquus ſuperior, and the edge of the protuberance, obſervable in the middle of that bone.

Uſe. If one muſcle acts, the head is thereby pulled a little to one ſide; but if both act in concert, the head is extended, or drawn directly backwards.

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* Le grand Complexus. Winſl.

N. B. A part of this muſcle is ſometimes found diſtinct from the reſt, and called by Albinus, Biventer Cervicis.

N. B. The Complexus ſeems to derive ſome part of its origin from the oblique proceſſes of the Vertebræ of the neck.

*In a dog it ariſes from the four ſuperior tranſverſe proceſſes of the back by ſo many thin and ſmall tendons, as alſo from the five lower ones of the neck by ſo many different heads, not unlike the Digituli of the great ſerrated muſcle, which uniting form a large fleſhy belly, that terminates tendinous in the lateral part of the Occiput, near its ridge.*

### RECTUS MAJOR *

ARISES fleſhy from one of the double ſpines of the ſecond Vertebra of the neck, and grows broader in its aſcent, which is not ſtraight, but obliquely outwards, being as it were divided into two thin portions, the innermoſt of which — Origin.

Is inſerted into the Occiput, near the Rectus lateralis; the other, which is the broadeſt, ends in the ſame bone under — Inſertion.

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* Rectus Capitis, poſticus major. Albin.

der part of the Obliquus major, tendinous and fleſhy.

Uſe. Its uſe is to extend, or pull the head backwards.

*This in a dog is double; the firſt, or Rectus major, comes from the lower part of this ſpinal proceſs; the ſecond, which I call Rectus medius, proceeds from the upper part of the ſame ſpine.*

### RECTUS MINOR *

Origin. ARISES narrow from a little protuberance in the middle of the back part of the firſt Vertebra Colli, cloſe by its fellow, and

Inſertion. Is inſerted pretty broad (its inner edge being only covered by the Rectus major) into the ſides of a dimple in the Os Occipitis, near its great Foramen.

Uſe. Its uſe is to aſſiſt the Rectus major in nodding or bowing the head a little backwards.

OBLIQUUS

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* Rectus Capitis, poſticus minor. Albin.

### OBLIQUUS SUPERIOR *

ARISES from the tranſverſe proceſs of the firſt Vertebra of the neck. Origin.

Is inſerted tendinous and fleſhy into the Os petroſum and Occipitale, between the back part of the Proceſſus mammillaris and the Muſculus complexus. Inſertion.

It ſerves for the oblique or ſemicircular motion of the head. Uſe.

*This in a dog is alſo double; one muſcle ariſes fleſhy from the extremity of the tranſverſe proceſs of the firſt Vertebra Colli, the other ſprings from all the upper edge of the ſame proceſs, and both ſeem to unite about their inſertion into the Occiput.*

### OBLIQUUS INFERIOR †

ARISES fleſhy from the ſpinal proceſs of the ſecond Vertebra Colli, and from ſome part of the body of the ſame next the ſpine. Origin.

Is inſerted into the tranſverſe proceſs of the firſt. Inſertion.

Its

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* Le petit Oblique. Winſl.

† Le grand Oblique. Winſl.

Uſe. Its uſe is to aſſiſt the former.

*In a dog it ariſes from the edge of the long ſpine of the ſecond Vertebra Colli.*

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## CHAP. XXVII.

## Of the muſcles of the NECK, that lie on its back part.

### SPINALIS †

Origin. ARISES by a great many tendinous and fleſhy fibres from the five ſuperior tranſverſe proceſſes of the Vertebræ of the back; aſcending obliquely under the Complexus.

Inſertion. Is inſerted into the fifth, fourth, third and ſecond ſpinal proceſſes of the neck, by four ſmall tendons.

Uſe. Its uſe is to extend the neck, by drawing it directly backwards.

*In a dog it much better deſerves this name, becauſe it accompanies all the ſpines of the neck,*

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† Les Vertebraux externes du Demi-epineux, ou Tranſverſaire-epineux du Col. Win.

*neck, ariſing from the top of the firſt ſpinal proceſs of the back, and running ſtraight to that of the ſecond ſpondyle of the neck, being firmly faſtened to the ſides of all the intervening acute proceſſes.*

### TRANSVERSALIS *

Origin. ARISES tendinous and fleſhy, partly from the oblique proceſſes of the four inferior Vertebræ of the neck, and partly from the ſpace between them and the tranſverſe ones, being only a continuation of the ſame ſeries of muſcular fibres that compoſe the muſcles of the back, of the ſame name.

Inſertion. Is inſerted near the root of the ſuperior ſpines of the neck; yet the uppermoſt termination is not only into the ſpine of the ſecond Vertebra, but alſo into the body of the ſame ſpondyle laterally.

Uſe. Its uſe is to move the neck directly backwards, if both act; and obliquely backwards, if one only acts.

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* Pars Multifidi Spinæ. Albin.

Les Vertebraux internes du Demi-epineux, ou Tranſverſaire-epineux du Col. Win.

*In a dog the inſertion of this muſcle is into the bodies of the Vertebræ of the neck.*

### INTERSPINALES Cowp.

Origin. ARISE fleſhy from the ſuperior part of each double ſpinal proceſs of the neck, except the uppermoſt, which comes from the body of the firſt Vertebra, and are

Inſertion. Inſerted into the inferior part of all the ſaid ſpines.

Uſe. Their uſe is to bring theſe acute proceſſes near each other.

### INTERTRANSVERSALES Cowp.

The diſtance between the tranſverſe proceſſes of the Vertebræ of the neck, moſt of which are bifid or forked, is

Origin. filled up with a fleſhy ſubſtance, ariſing from the inferior, and aſcending to its

Inſertion. inſertion at the ſuperior proceſs.

Uſe. Their uſe is to approximate theſe tranſverſe Apophyſes.

### INTERVERTEBRALES *** †

They ariſe from the body of one Vertebra laterally, and are Origin.

Inſerted after an oblique progreſs into the back part of the other Vertebra immediately above it. Inſertion.

Their uſe is to draw the bodies of the Vertebra nearer one another, and a little to one ſide. Uſe.

N. B. The number of theſe little ſmall muſcles is very uncertain, becauſe they vary in moſt ſubjects; the laſt pair, being the ſlendereſt of all, are chiefly conſpicuous upon the back part of the firſt and ſecond, and ſecond and third Vertebræ.

*In a dog they are all larger than in man.*

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† Partes Multifidi Spinæ. Albin.

# CHAP. XXVIII.

## Of the muſcles of the BACK.

THO' the muſcles that lie upon the Vertebræ of the back and loins do appear, even in the opinion of the great Fallopius, to be only a confuſed maſs, or indigeſted heap of tendinous and fleſhy fibres, extremely intricate, and ſo variouſly interwoven one with another, that it ſeems very difficult, if poſſible, to ſeparate them; yet, in my anatomical exerciſes, I always demonſtrate them, having in all ſubjects found them regular and uniform, fairly and diſtinctly divided into eighteen muſcles, nine on each ſide; one of which belongs to the Thorax, viz. the Sacro-lumbalis, already deſcribed; three to the back, and five to the loins. Galen and Mr. Duverney think it indifferent, either to reckon theſe muſcles, which they call Spinales and Vertebrales, as one pair only, or to multiply their number according to that of the Vertebræ; but in my judgment the laſt would breed a great deal of confuſion, and the firſt ſhews but little of an artiſt.

### LONGISSIMUS

The origin of this muſcle is in common with that of the Sacro-lumbalis. Origin.

Is inſerted into all the tranſverſe proceſſes of the back by a double tendon into each; from its outſide there go off ſeveral Faſciculi of fleſhy fibres, interſperſed with a few tendinous filaments, which are ſoon inſerted into the lower edge of moſt of the ribs, not far from their tubercle. Inſertion.

Its uſe is to extend the Vertebræ of the back, and ſo keep the trunk of the body erect. Uſe.

N. B. From the ſuperior part of this muſcle there runs up a round fleſhy portion, * which becoming tendinous, unites with the carnous part of the Par tertium Fallopii, which I have called Trachelo-maſtoidæus.

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* An tranſverſalis Cervicis. Albin. & le grand Tranſverſaire du Col. Winſl.?

### SEMISPINALIS *

Origin. ARISES from the tranſverſe proceſſes of the ſix or ſeven lowermoſt Vertebræ of the back by ſo many diſtinct tendons, which ſoon grow fleſhy, and then becoming tendinous again, are

Inſertion. Inſerted tendinous into all the ſuperior ſpinal proceſſes of the back, and into the lowermoſt ſpine of the neck.

Uſe. Its uſe is to aſſiſt the following.

### TRANSVERSALES DORSI INTERIORES †

Origin. ARISE tendinous and fleſhy from the upper part of the tranſverſe proceſſes of the back; then growing all fleſhy, they run over the next Vertebra, and are

Inſertion. Inſerted near the root of all its ſphinal Apophyſes.

Uſe. If they all act on one ſide, they extend the back obliquely, or move it laterally;

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* Les Vertebraux externes du Demi-epineux, ou Tranſverſaire-epineux du Dos. Win.

† Pars Multifidi Spinæ. Albin.

Les Vertebraux internes du Demi-epineux, ou Tranſverſaire-epineux du Dos. Winſl.

terally; but if they work together, they extend the Vertebræ dorſales by pulling them backwards.

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## CHAP. XXIX.

## Of the muſcles of the LOINS.

THE Vertebræ of the loins are moved by five pair of muſcles.

### SPINALIS Cowp.

ARISES tendinous and fleſhy from the ſuperior ſingle ſpines of the Os ſacrum, in common with the Sacro-lumbalis and Dorſi longiſſimus, and Origin.

Is inſerted tendinous into all the ſpinal proceſſes of the Vertebræ Lumborum. Inſertion.

Its uſe is to extend the aforeſaid Vertebræ. Uſe.

### TRANSVERSALIS LUMBORUM, vulgò SACER, *

Origin. ARISES fleſhy from the oblique proceſſes of the Vertebræ of the loins, and

Inſertion. Is inſerted near the root of their ſpinal ones.

Uſe. Its uſe is to move the Vertebræ Lumborum after the ſame manner that the Tranſverſales do thoſe of the back.

### QUADRATUS †

Origin. ARISES broad and tendineo-carnous from the poſterior part of the ſpine of the Ilium.

Inſertion. Is inſerted into the tranſverſe proceſſes of all the Vertebræ Lumborum, except the laſt, into the laſt rib, and by a ſmall tendon that creeps up under the Diaphragm into the laſt Vertebra of the back laterally.

N. B. From

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* Le Tranſverſaire-epineux de Lombes. Winſl.

Pars Multifidi Spinæ. Albin.

† Le Quarré, ou Lombaire externe. Winſl.

N. B. From the fourth, third, and ſometimes the ſecond tranſverſe proceſs, there ariſe ſo many ſmall muſcles which unite with this Quadratus on its inſide, that reſpects the cavity of the Abdomen.

Its uſe is to move the loins to one ſide, and when both act together to bend the Vertebræ ſtraight forwards. Uſe.

*In a dog it ariſes from the ſpine of the Ilium internally, and aſcending, adheres to all the tranſverſe proceſſes of the loins; then entering the cavity of the Thorax, it ends tendinous and fleſhy in its tenth or ninth Vertebra, counting from above downwards.*

### PSOAS PARVUS Riol.

ARISES fleſhy from the upper Vertebræ of the loins laterally. Origin.

Is inſerted by a long flat thin tendon into that part of the Os Pubis, where it joins the Ilium. Inſertion.

Its uſe is to aſſiſt the Recti Abdominis in drawing the Os Pubis upwards, as in raiſing ourſelves from a decumbent poſture, as Mr. Cowper writes. It may Uſe.

alſo ſerve to bend the loins forwards; but then its beginning muſt be drawn from the Os Pubis, and its termination be fixed in their Vertebræ.

*This in a human body is often miſſed, but never in a dog, ariſing from the bodies of the four lowermoſt Vertebræ Dorſi, and as many of the upper ſpondyles of the loins, by ſo many ſmall tendons laterally, and fleſhy from the middle of all the ſame Vertebræ laterally. It ſoon turns into a broad and thin tendon, expanded over the great Pſoas.*

### INTERTRANSVERSALES ***

These lie between the tranſverſe proceſſes of the loins, ariſing from all the edge of one, and terminating into that of the other.

Origin.

Inſertion.

Uſe.

Their uſe is to bring theſe Apophyſes nearer each other.

*It was in a dog that I firſt diſcovered theſe ſmall muſcles, and I have never ſince miſſed them in the human body.*

## CHAP. XXX.

## Of the muſcles of the HUMERUS, or ARM.

THE Os Humeri, or ſhoulder-bone, is moved by nine muſcles.

### PECTORALIS

ARISES fleſhy from near half the anterior part of the Clavicula, and from the cartilaginous endings of the fifth and ſixth ribs, where it always detaches a Faſciculus or two of fleſhy fibres, which run down upon the membrane that covers the Muſculus Abdominis externus, and is deſcribed very accurately by R. Columbus; beſides, it derives another origin from almoſt all the length of the Sternum by a great many ſhort and ſmall tendons, which plainly decuſſate thoſe on the other ſide. Origin.

Is inſerted by two ſtrong and broad tendons, which croſs one another, at the upper and inner part of the Os Humeri, between the Deltoides and Biceps. Inſertion

Uſe, Its uſe is to move the arm upwards.

N. B. Its ſuperior tendon gives riſe to the Involucrum, or tendinous ligament that binds in one of the heads of the Biceps.

*In a dog the fibres of this muſcle run in three different directions, and may be eaſily divided into three muſcles.*

*The largeſt ariſes by an acute fleſhy beginning from the Cartilago enſiformis, and from almoſt all the Sternum, and is inſerted by a ſhort and ſtrong tendon into a protuberance in the head of the Os Humeri, and by a membranous tendon into the ſame bone lower down.*

*The ſecond muſcle lies on the outſide of this, ariſing from near the extremity of the Cartilago enſiformis, and aſcending, is partly inſerted with the former, and partly runs down upon the muſcles lying on the inſide of the Humerus.*

*The third, which from its poſition deſerves the name of Tranſverſalis, ariſes from the upper part of the breaſt, and croſſing over the firſt, terminates below it, by a ſtrong and broad*

*broad tendon, all along the ſore part of the Os Humeri externally.*

### DELTOIDES

ARISES fleſhy from all the poſterior and external part of the clavicle that the Pectoralis does not poſſeſs, tendinous and fleſhy from the lower margin of the fore part of the Spina Scapulæ, and intirely tendinous from the poſterior part of the ſame. Origin.

Is inſerted tendinous and fleſhy at a rough protuberance in the fore part of the arm about its middle, the fibres of its Apex or point being intermixed with ſome part of the Brachiæus internus. Inſertion.

Its uſe is to pull the arm directly upwards, and that either ſomewhat forwards or backwards, according to the different direction of its fibres. Uſe.

*In a dog it ariſes tendineo-membranous from almoſt all the ſpine of the Scapula; that part of it which ſprings from the Acromion ſeems to be diſtinct from its other origin, but yet cannot be divided without violence; its action is all upwards and outwards, be-*

*cauſe it has no beginning from the Clavicle, which is wanting, to direct it inwards.*

### SUPRASPINATUS

Origin. ARISES fleſhy from all the Baſis Scapulæ that is above its ſpine, as alſo from its ſpine and upper Coſta.

Inſertion. Is inſerted tendinous into that part of the protuberance on the head of the Os Humeri that is next the canal of the Biceps.

Uſe. Its uſe is to lift or move the arm upwards.

### INFRASPINATUS

Origin. ARISES fleſhy from all that part of the Baſis Scapulæ that is between its ſpine and its lower angle, from the ſpine as far as its Cervix, and from the edge of all that Foſſa that runs above its inferior Coſta.

Inſertion. Is inſerted by a thick and ſhort tendon into the upper part of a rough and flattiſh protuberance on the head of the Os Humeri.

Uſe. Its uſe is to pull the arm directly backwards.

N. B. 1. On the inſide of this muſcle one may obſerve two or three large tendons run along its fleſhy ſubſtance.

2. This and the former are both covered with a tendinous membrane, which not only ſtrengthens their actions, but alſo keeps them from ſwelling too much outwardly in acting.

*In a dog, through its middle lengthways, there runs a tendon from which the fleſhy Fibrillæ run off on each ſide, like the Stamina of a feather.*

### TERES MINOR

ARISES fleſhy from all the round edge of the inferior Coſta Scapulæ, being in all ſubjects, that ever I diſſected, diſtinguiſhed from the Infraſpinatus by a very conſiderable membrane. Origin.

Is inſerted tendinous a little below the termination of the laſt named muſcle, and fleſhy a little lower upon the neck of the Os Humeri. Inſertion.

Its uſe is to aſſiſt the bigger round muſcle, in bringing the arm backwards. Uſe.

*In a dog it ariſes by a thin tendon, which cloſely adheres to the Infraſpinatus from the middle of the lower edge of the Scapula, and turning into a round fleſhy belly, it paſſes obliquely over the head of the Longus to its tendinous inſertion,*

## TERES MAJOR

Origin. ARISES fleſhy from the inferior angle of the Scapula, and from all that portion of its lower rib, or Coſta, that is rough and thicker than the reſt, its fleſhy fibres being continued over part of the Infraſpinatus, to which they firmly adhere.

Inſertion. Is inſerted by a ſhort, broad and thin tendon, at a roughneſs a little below the head of the Os Humeri internally; and though it is very cloſely joined to the tendon of the Latiſſimus Dorſi, yet they part before their inſertions into that bone.

Uſe. Its uſe is to move the arm backwards and downwards.

LATIS-

### LATISSIMUS DORSI

ARISES by a thin tendon from the poſterior part of the ſpine of the Ilium, from the ſuperior ſpines of the Os ſacrum, from all thoſe of the Vertebræ Lumborum, and from ſeven or eight of the lowermoſt ones of the back, below the Rhomboides; beſides, it has another origin tendinous and fleſhy from the extremity of the bony part of the four or five lowermoſt ribs, near their cartilages, by ſo many diſtinct ſlips. I never found it adhere to the inferior angle of the Scapula by any carnous fibres, it being only connected by membranes to the Teres major and Rhomboides. Origin.

Is inſerted by a ſtrong and thin tendon upon the edge of the channel of the Biceps, near the termination of the pectoral muſcle. Inſertion

Its uſe is to pull the arm backwards and downwards. Uſe.

N. B. In ſome muſcular diſſections ſince this ſpecimen was made publick, I ob-

I obſerved a ſmall bundle of fleſhy fibres to ariſe from the outſide of the Baſis Scapulæ near its inferior angle, and adhering to the upper part of this muſcle in its progreſs along the Coſta inferior of the ſhoulder-blade, to be loſt into the ſame, juſt where it begins to grow tendinous. That this is ſo in all bodies I am apt to believe, though before this I had never remarked it.

*In a dog, when this muſcle arrives at the Teres major, it parts with a thin fleſhy production, which running down upon the Longus Cubiti, terminates tendinous into the Ancon. A little before its inſertion it receives the Membrana carnoſa, which fleſhy pannicle or membrane, is a thin carnous expanſion which covers the muſcles that lie on the upper part of the Os Femoris, the Ilium and Sacrum, the Abdomen, Dorſum, and moſt part of the Thorax; as it comes near the Axilla, it narrows and grows thicker, and then joins in with this muſcle, where it terminates. By the contraction of its fibres the ſkin is wrinkled, and the hairs on the back made to ſtand erect when this animal is angry or afraid.*

### CORACO-BRACHIALIS

ARISES partly tendinous, and partly fleſhy, from the under ſide of the Proceſſus Coracoides Scapulæ near its tip, adhering in its deſcent to one of the heads of the Biceps. Origin.

Is inſerted tendineo-carnous about the middle of the internal part of the Os Humeri, ſending down a thin tendinous expanſion to the inner condyle of that bone. Inſertion.

Its uſe is to lift or move the arm upwards. Through this muſcle paſſeth a large branch from the fourth pair of nerves of the neck, which conſtitutes the firſt Brachial pair. Uſe.

*In a dog it is a ſmall thin muſcle, ariſing from a protuberance in the upper part of the ſuperior Coſta Scapulæ by a very ſlender tendon, which paſſing over the head of the Humerus, grows fleſhy, and is ſo inſerted into the inſide of that bone, about an inch or more below its neck.*

## SUBSCAPULARIS

Origin. ARISES fleſhy from all the baſis of the Scapula, from all its ſuperior Coſta, and about one half of its inferior; beſides, it has two tendinous beginnings ariſing from two little protuberances, ſeated in the hollow part of this bone near its baſis, at two or three inches diſtance one from another, which tendons are continued through the fleſhy part of the muſcle to its ending, being ſubdivided into many more as it paſſes over the juncture.

Inſertion. Is inſerted tendinous into the upper edge of the protuberance, on the head of the Os Humeri laterally.

Uſe. Its uſe is to bring the arm cloſe to the ribs.

The tendon of this, with that of the Infra and Supra-ſpinatus, adheres firmly to the membrane that involves the articulation of the Humerus with the Scapula; but they may be all eaſily divided one from another, without cutting their tendinous fibres.

*In a dog it only fills up three parts of the concave or hollow part of the Scapula, the Serratus Anticus major poſſeſſing the reſt.*

*Beſides the nine pair of muſcles above deſcribed, a dog has two more: the firſt I name*

*Levator Humeri proprius. It ariſes membranous and fleſhy from all the ſpace between the tendinous ending of the Maſtoidæus, and the ridge of the Occiput, and from the upper part of the Ligamentum Colli; this large beginning contracts and grows narrower, as it runs obliquely down the neck, cloſely adhering to ſome part of the Levator Scapulæ major, and paſſing over the articulation of the Humerus, goes ſtraight down to its inſertion in the fore part of the ſame bone, near the flexure of the Cubit, between the Biceps and Brachiæus internus. The ſecond I call*

*Muſculus ad Levatorem acceſſorius. It ariſes from the Os Occipitis, near the inſertion of the thick tendon of the Maſtoidæus and becoming a thick fleſhy muſcle, runs down to its inſertion into the Levator proprius, being there of an equal breadth with it. Juſt above the head of the Os Humeri, near the termination*

*termination of this muſcle there is placed a ſmall falcated cartilaginous bone, tied to the Scapula and top of the Sternum by two ſmall ligaments, which ſeem to be an imperfect Clavicle.*

*In Cats this muſcle is inſerted into the whole length of their Clavicula, which it ſerves to lift up. But in this animal the uſe of this acceſſory muſcle ſeems calculated for the aſſiſtance of the Levator, which ſerves to raiſe the Os Humeri upwards, and at the ſame time to turn it a little outwards, whereby the fore feet are kept from interfering or cutting one another in running or leaping.*

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## CHAP. XXXI.

## Of the muſcles of the CUBIT.

THE Cubit, or fore-arm, reaching from the extremity of the Os Humeri to the wriſt, and compoſed of two bones, viz. the Ulna and Radius, has five muſcles.

## BICEPS INTERNUS †

Origin.

Its firſt and outermoſt head ariſes tendinous from the Cervix-ſcapulæ, near the upper and narrow edge of its cavity, called Acetabulum, which in its deſcent is incloſed in a channel in the head of the Os Humeri by a membranous ligament that proceeds from the pectoral muſcle. The ſecond, or innermoſt, ariſes tendinous and fleſhy from the Proceſſus Coracoides Scapulæ. A little below the middle of the fore part of the arm theſe heads unite.

Inſertion.

Is inſerted by a ſtrong and thick tendon into all the Tubercle on the upper end of the Radius internally.

Uſe.

Its uſe is to bend the Cubit.

N. B. About the flexure of the Cubit, or bending of the elbow, where it begins to grow tendinous, it ſends off an Aponeuroſis, firſt taken notice of by that celebrated anatomiſt, Mr. Cowper, vid. Myotom. reformat. page 147. which covers all the muſcles on the inſide of the Cubit. Its fibres decuſſate thoſe of another tendinous membrane that lies under it.

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† Biceps Brachii. Albin.
Le Coraco-radial, ou Biceps. Winſl.

*In a dog it conſiſts but of one head, ariſing from the Cervix-ſcapulæ; and on that account I call it Flectens Cubitum anterior, becauſe it lies above the following muſcle.*

### BRACHIALIS INTERNUS *

Origin. ARISES fleſhy from the middle of the Os Humeri at each ſide of the termination of the Deltoides muſcle, filling up all the ſpace between the two edges of this bone.

Inſertion. Is inſerted by a very ſtrong tendon into the upper and fore part of the Ulna.

Uſe. Its uſe is to aſſiſt the former.

*In a dog it ariſes broad and fleſhy from the back part of the Humerus, juſt under its neck; from thence it runs obliquely to the fore part of that bone, and then proceeds as in man.*

BICEPS

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* Le Brachial. Winſl.

### BICEPS EXTERNUS *

The firſt head, called Longus, † ariſes broad and tendinous from the Coſta Scapulæ inferior, and a little fleſhy from its neck. The ſecond head, called Brevis ‖, ariſes by an acute, tendinous and fleſhy beginning from the Os Humeri, about an inch below its head. Upon the back ſide of the Humerus, theſe two, with the following muſcle, join their fibres, and are Origin.

Inſerted into the upper and external proceſs of the Ulna, called Ancon. Inſertion.

Its uſe is to extend the Cubit. Uſe.

### BRACHIALIS EXTERNUS §

ARISES by an acute fleſhy beginning from the Os Humeri, a little higher than the inſertion of the Teres major. About the Origin.

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* N. B. The two heads of this, and the following muſcle, are deſcribed by Albinus, under the name of Triceps Brachii.

† Le grand Anconé.

‖ L'Anconé externe.

§ L'Anconé interne.

the middle of the arm it paſſes under the Longus, with which it mixes fibres to the external ridge of that bone, being continued down the ſame to the condyle of that ſide, where ſome of its fibres join inſeparably with the Angonæus; the reſt ending in the Ancon, with thoſe of the Longus and Brevis.

N. B. The Brachiæus externus, and the Biceps externus, or Gemellus, make but one ſingle muſcle with three heads, to which I give the name of Triceps Cubiti, or Extenſor Cubiti magnus Triplici principio natus.

### ANGONÆUS, vel CUBITALIS, Riol. *

Origin. ARISES by a round and ſhort tendon from the back part of the external condyle of the Os Humeri; this ſoon grows fleſhy, and is ſo intangled with part of the Brachiæus externus, that there can be no ſeparating them without violence.

Inſertion. Is inſerted fleſhy and thin into the lateral part of the Ulna, a few inches below the Olecranon.

Its

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* Anconeus. Albin.
Le petit Anconé. Winſl.

Its uſe is to aſſiſt in extending the Cubitus. Uſe.

*In a dog the extenſion of the cubit, or Ulna, is performed by the joint action of five very diſtinct muſcles.*

*Extenſor primus, or longus, ariſes as in man, and becomes a very thick and fleſhy belly, but gradually contracting, grows tendinous, and is ſo inſerted into the upper and external part of that proceſs of the Ulna, called Ancon in human bodies.*

*Extenſor ſecundus, or Brevis, ariſes from the ſuperior and back part of the Humerus, juſt under its ſmooth head, and deſcending under the Longus, turns into a ſmall tendon, which paſſing through a Sulcus in the extremity of the Ulna, ends a little below the Longus.*

*Extenſor tertius, which is ſomething analogous to that head of the Triceps Cubiti, called Brachiæus externus, is a pretty thick fleſhy muſcle, ariſing from the upper and poſterior part of the Humerus, at a protuberance near the ending of the Teres minor; it ends in the outſide of the Ancon.*

*Extenſor quartus, vel Anconæus, fills up a cavity or hollow between the heads of the Ulna and Radius, ariſing and terminating as in man.*

*Extenſor quintus ariſes by a thin tendon from the inſide of that protuberance, into which the Supra-ſpinatus of the Scapula is inſerted, and paſſing under the tendon of the Teres major, becomes fleſhy, and ends tendinous on the inſide of the Ancon.*

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## CHAP. XXXII.

## Of the muſcles of the PALM of the HAND.

THE muſcles of the Palma, or Vola Manûs, are two.

### PALMARIS LONGUS *

Origin. ARISES tendinous from the internal protuberance of the Os Humeri; it ſoon becomes fleſhy, and within a few inches becomes tendinous again. About the

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* Le Cubital greſle. Winſl.

Ligamentum Carpi annulare it expands itſelf into a broad diſgregated tendon, (giving ſome filaments to the Ligamentum annulare, to the Abductor Pollicis, and to the Flexor of the firſt internode) between which and the ſkin there lies a great deal of fat. Near the lower end of the metacarpal bones it is decuſſated by a great many tendinous ſtraight fibres, which run upon it from one ſide to the other.

Its inſertion is by two ſmall tendons into the ſides of the cartilage that lies upon the articulation of each finger, with the Oſſa Metacarpi. Inſertion.

Its uſe is to contract the palm of the hand, and ſo aſſiſt it to graſp any thing cloſely. Uſe.

N. B. This muſcle does ſometimes ſpring from the Ligamentum annulare.

*It is wanting in a dog.*

### PALMARIS BREVIS, Joan. Bapt. Cannan. vel CARO QUADRATA *

Origin. ARISES by a membrane-like tendon from the ſuperior and external part of the Os Metacarpi minimi Digiti; whence aſcending obliquely, and adhering to the fourth bone of the Carpus that lies upon the third, it grows fleſhy in two or three places, being ſeparated by intervening membranes; and paſſing under the Palmaris longus,

Inſertion. Is inſerted tendinous into the Ligamentum annulare, and into that bone of the Carpus that articulates with the thumb. The upper part of this tendon adheres to the Abductor Pollicis, and its lower part to the Flexor ſecundi Internodii ejuſdem.

Uſe. Its uſe is to make the palm of the hand hollow, by drawing the ball of the thumb towards the Os Metacarpi, that ſuſtains the little finger, and ſo forms what they call Diogenes's cup.

*This is wanting in a dog.*

CHAP.

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[*] Le Palmaire cutané. Winſl.

# CHAP. XXXIII.

## Of the muſcles of the WRIST.

THE Carpus, or Wriſt, compoſed of eight ſmall bones, ſituate between the extremities of the Ulna and Radius, and the upper part of the metacarpal bones, is furniſhed with four muſcles, and yet all of them, as Veſlingius remarks, terminate in the bones of the Metacarpus.

### FLEXOR CARPI RADIALIS *

ARISES tendinous and fleſhy from the internal protuberance of the Os Humeri, and from the rough edge of all the anterior proceſs of the Ulna, where it firmly adheres to the Pronator Radii Teres. Origin.

Is inſerted by a flat tendon into the fore and upper part of the Os Metacarpi, that joins with the fore-finger, having run through a Sinus, or cavity, in the bone of the wriſt, that articulates with the Inſertion.

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* Radialis internus. Albin. & Winſl.

the thumb, being there bound in by a membrane which parts it from the tendons of the other muſcles, which with it paſs under the Ligamentum annulare.

Uſe. Its uſe is to bend the wriſt, together with the hand, and when it acts in conjunction with the Radialis extenſor, the wriſt is moved laterally towards the Radius.

### Flexor Carpi Ulnaris *

Origin. Arises tendinous from the ſame Tubercle of the arm-bone. It has likewiſe a narrow fleſhy beginning from the ſide of the Ancon, between which and its tendinous origin a large branch of the brachial nerve, called Ramus Ulnaris, paſſes to the Cubit. In its deſcent, according to the length of the Ulna, it is covered by a tendinous expanſion in common with the other muſcles that lie on the outſide of the Cubit; and by this only it ſeems to adhere to the external edge of that bone.

Is

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* Ulnaris internus. Winſl.
Le Cubital interne. Winſl.

Is inſerted by a ſhort and ſtrong tendon into the fourth bone of the firſt rank of the Carpus, placed upon the third; at ſome diſtance from its termination, there goes a ligament from this little bone to the Os Metacarpi minimi Digiti, which ſome reckon to be a continuation only of the tendon of this muſcle. Inſertion.

Its uſe is to aſſiſt the former, in bending the Carpus. Uſe.

*In a dog it makes two diſtinct muſcles; the largeſt ariſes tendinous from the inner Tubercle of the Humerus, near the edge of the Sinus, that receives the Ulna; is inſerted into the bone of the Carpus that ſtands out of rank. The leſſer has a thin fleſhy origin continued from the Ancon, about an inch down the inſide of the Ulna; and terminates into the ſame bone with the bigger, at ſome diſtance from it.*

### EXTENSOR CARPI RADIALIS

Makes two very diſtinct muſcles; the firſt which I call Longus, or ſuperior *, ariſes

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* Radialis externus longior. Albin.
Le Radial externe premiere. Winſl.

Origin. ariſes broad, thin, and fleſhy, from the lower part of the external ridge of the Os Humeri, between the Supinator Radii longus and the Condyle. The other, which I name Brevis, or inferior †, ſprings tendineo-carnous from the ſame protuberance of the Os Humeri: they both lie on the outſide of the Radius, the laſt continuing fleſhy lower down than the firſt. The Longus

Inſertion. Is inſerted into the upper part of the bone of the Metacarpus, that ſuſtains the fore-finger: the Brevis into that which ſtays the middle-finger; both being tendinous.

Uſe. Its uſe is to extend the Wriſt, and bring the hand backwards.

*In a dog it may properly enough be called Bicornis; becauſe it cannot, without great violence, be parted at its origin.*

EXTENSOR

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† Radialis externus brevior.
Le Radial externe ſecond.

### EXTENSOR CARPI ULNARIS *

ARISES tendinous from the external protuberance of the Os Humeri, between the Anconæus and Extenſor Digitorum communis, and fleſhy from the upper part of the Cubit laterally, deſcending according to the length of this bone, its round tendon being incloſed in a channel dug in its extremity; from which to its termination, it paſſes thro' a ligament like a ſheath. Origin.

Is inſerted tendinous into the ſuperior part of the metacarpal bone, that ſupports the little finger. Inſertion.

Its uſe is to aſſiſt the muſcle laſt deſcribed. Uſe.

N. B. It is covered with a tendinous expanſion, continued down from ſome of the tendons of the extenſors of the Cubit, which Aponeuroſis is finely expanded over all the muſcles that lie on the outſide of the fore-arm, as that of the Biceps is on thoſe of its inſide.

When

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* Ulnaris externus. Albin.
Le Cubital externe. Winſl.

When this and the Flexor Ulnaris act at once, the wriſt, with the hand, is moved ſideways towards the Ulna.

*In a dog it beſtows a tendon on the bone of the Carpus, that ſtands upon another, on which account, this pulls the Carpus a little outwards in extenſion, which is of very great advantage to this animal in running.*

## CHAP. XXXIV.

## Of the muſcles of the FOUR FINGERS.

THE muſcles of the four fingers I divide into common and proper: the common are ſuch as belong to all the four fingers, being thirteen in number, viz. one Extenſor, two Flexors, four Lumbricales, and ſix Interoſſei.

### PERFORATUS *

Origin. ARISES tendineo-carnous from the inner protuberance of the Os Humeri, tendinous from the anterior proceſs of the Ulna, near the edge of its lunated cavity, and tendineo-membranous from about the middle of the fore part of the Radius; being ſo continued from near the beginning of the Flexor pollicis magnus, three or four inches down that bone: its fleſhy belly divides into four tendons, before it paſſes under the ligament of the wriſt, and theſe are

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* Sublimis. Albin.

Inſertion.

Inſerted into the ſuperior part of the ſecond bone of each finger, that which goes to the little one, being by far the ſmalleſt. In the palm of the hand they are united to one another, and to thoſe of the muſcle next in order by ſoft ſlimy membranes; about the middle of the firſt joint they are divided for the free paſſage of the tendons of the Perforans, and where they unite again one may obſerve a very fair decuſſation of ſome of the tendinous filaments of one ſide running acroſs to the other; then ſubdividing, as Mr. Cowper has well remarked, they march for ſome ſpace upon the edges of the bones before they are loſt upon their upper part, as I have in all ſubjects obſerved.

Uſe. Its uſe is to bend the ſecond joint of the fingers.

*In a dog the tendons of this muſcle are not ſlit for the paſſing of thoſe of the Perforans, but they form a round caſe as long as the firſt joint, which covers thoſe on all ſides in their paſſage; having only a little hole of an oval figure on its outſide. They end without any ſubdiviſion.*

## PERFORANS *

Origin. ARISES fleſhy from all the upper part of the Ulna laterally, being continued down its external ridge, or ſpine, to its middle, from the inner edge and fore part of that bone, and from one half of the ligament that joins it to the Radius; the thick, ſuperior, fleſhy part of this muſcle is firmly kept in by the Faſcia tendinoſa that covers the muſcles lying on the outſide of the fore-arm, as has been already remarked: ſplitting into four tendons a little before it paſſes the tranſverſe ligament of the Carpus, they run through the fiſſures, or ſlits, made in the former tendons, being continued farther on to their inſertion into the third bone of all the four fingers.

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* Profundus. Albin.

Its uſe is to bend the laſt joint of the fingers. Uſe.

*In a dog it ariſes by three diſtinct fleſhy originations; the outermoſt proceeds from the upper and middle part of the Radius, the innermoſt ariſes from the upper part of the Ulna, being farther continued down moſt of its edge: both theſe heads are very ſmall, but the middlemoſt makes a very large big bellied muſcle, ſeemingly divided into two or three, which ſprings from the internal protuberance of the Os Humeri. Thoſe three unite and form a thick and broad tendon, which ſoon ſplits into five ſmall ones; four terminating as in man, and the fifth ending in the thumb.*

### LUMBRICALES

Theſe four muſcles ariſe thin and fleſhy from the outſide of the tendons of the Flexor profundus, a little below Origin.

the Ligamentum tranſverſale ; to which, in their deſcent, they adhere for ſome ſpace, but parting from thence they grow round and pretty large. They terminate by long and ſlender tendons, which run over the tranſverſe cartilaginous ligament, placed upon the articulation of the firſt bone of the fingers, with thoſe of the Metacarpus, into the broad tendons of the Interoſſei, about the middle of the firſt Internode next the thumb laterally.

Inſertion.

Uſe.

They are ſaid to aſſiſt in bending the firſt joint of the fingers.

## EXTENSOR DIGITORUM COMMUNIS

Origin.

ARISES by an acute tendon from the outward extuberance of the Os Humeri between the Extenſors of the Carpus, cloſely adhering to the Supinator Radii brevis. Before it paſſes under the Ligamentum Carpi, it ſplits into four flat tendons, each of which may be divided into a great many ſmaller. It is chiefly about the extremity of the metacarpal bones that they remit tendinous filaments to each other. Theſe tendons are

Inſerted into the upper part of the ſecond bone of each of the four fingers, being tacked to the firſt joint in their way thither. Inſertion.

Its uſe is to extend the firſt and ſecond joint of the fingers. Uſe.

*In a dog it runs to the laſt bone of each toe, between the two ligaments that go from the ſecond Internode to the third. The uſe of theſe ligaments is to draw the laſt joint backwards and upwards, and keep it ſuſpended, that the extending tendon may not always be upon the ſtretch, as ſhall be more fully explained in another place.*

### INTEROSSEI

Are well divided into external and internal. The external fill up all the ſpace that the bones of the Metacarpus leave towards the back of the hand: the internal, which, properly ſpeaking deſerve not the appellation of Interoſſei, ariſe from the fore part of the metacarpal bones that reſpects the palm of the hand, being only conſpicuous in the Vola, and not in the Dorſum Manûs; whereas the external are apparent in both.

Origin. The firſt * interoſſeous muſcle ariſes tendinous and fleſhy from all the fore part of the Os Metacarpi Indicis, between its head and condyle; as alſo from the upper part of the Os Metacarpi medii Digiti. This, which is the firſt of the internal, belongs to the ſide of the fore finger, next the middle one.

Origin. The ſecond, † which is the firſt of the external, ariſes from moſt of the outſide of the Os Metacarpi medii Digiti, and a little tendinous from its fore part, juſt under its head, being conſpicuous both towards the back and palm of the hand. This runs along the ſide of the middle finger next the Index.

Origin. The third, ‡ which is the ſecond of the external, and runs along the other ſide

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* Poſterior Indicis. Albin.

† Prior Medii. Albin.

‡ Poſterior Medii. Albin.

ſide of the middle finger, fills up all the ſpace between its metacarpal bone and that which ſupports the ring finger; from both which it ſprings, as alſo from ſome of the fore part of this bone laterally, being likewiſe very conſpicuous in the palm of the hand.

Origin.

The fourth, * which is the ſecond of the internal, belongs to the ſide of the ring finger, next the middle one, ariſing from all the fore part of its metacarpal bone below its head.

Origin.

The fifth, † which is the third of the external, runs along the other ſide of this finger, and fills up all the ſpace between the metacarpal bone of this and that of the little finger, on the back of the hand, ariſing from both thoſe bones.

Origin.

The ſixth, || or third of the internal, runs along the ſide of the little finger, next the ring finger, and ariſes tendinous

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* Prior Annularis. Albin.

† Poſterior Annularis. Albin.

§ Interoſſeus Auricularis. Albin.

nous and fleſhy from the anterior edge of all its metacarpal bone.

All theſe muſcles of both kinds paſs under the tranſverſe cartilaginous ligament, already deſcribed, and then each of their fleſhy bellies forms two tendons; one is ſoon

Inſertion. Inſerted into the upper part of the firſt Internode laterally; the other is dilated very broad, ſo as to cover moſt of the firſt joint adhering to the tendon of the Extenſor; then, narrowing a little as it approaches the upper part of the ſecond internode, where the laſt named muſcle ends, it runs obliquely along that bone to its termination at the ſuperior part of the laſt joint of the finger, having firſt joined with its fellow of the other ſide.

Uſe. When the long tendons act, they extend the laſt Internode, and ſo ſupply what was wanting in the Extenſor magnus; and when the ſhort ones are in action, the fingers are moved laterally, i. e. they are either brought nearer, or drawn further from the thumb.

*In a dog, ſomething analogous to theſe, I obſerve ſix muſcles; four of which are large, placed not between, but in the hollow of the metacarpal bones, and run ſtraight down: the other two are very ſmall, and run oblique. The large ariſe tendinous and fleſhy from the ſuperior part of the metacarpal bones adhering to the ſame in their deſcent: at the Os ſeſamoidæum of the firſt joint, each divides into two tendons, and running obliquely along the ſides of the finger, or paw, they unite inſeparably with the tendon of the Extenſor, near the lower part of the firſt bone of each fore toe.*

*The firſt of the two little ones belongs to the fore toe, or Index; it ariſes from the upper part of the Os Metacarpi medii Digiti, and deſcending obliquely grows tendinous about the firſt joint, and terminates near the middle of this bone laterally internally.*

*The ſecond ariſes from the Os Metacarpi of the third fore toe, or finger, and after an oblique progreſs, ends in the inſide of the firſt bone of the little fore toe. Their uſe is to bring thoſe two toes nearer the middle ones.*

The proper muſcles of the fingers are ſuch as belong either to the fore or little finger.

## CHAP. XXXV.

## Of the muſcles of the FORE-FINGER.

THE fore-finger, or Index, has three muſcles.

### EXTENSOR SECUNDI INTERNODII INDICIS PROPRIUS, vulgò INDICATOR. *

Origin. ARISES by an acute fleſhy beginning from the middle of the Ulna, immediately below the Extenſores Pollicis, turning tendinous, it paſſes under the ſame annular ligament with the Extenſor communis.

Inſertion. Is inſerted at the upper part of the ſecond joint, on the inſide of the Extenſor magnus.

Its

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* L'Extenſeur propre de l'Index. Winſl.

Its uſe is to extend the fore-finger a little obliquely. Uſe.

*In a dog it is inſerted into the laſt joint.*

### EXTENSOR TERTII INTERNODII INDICIS. *

ARISES fleſhy from all the outſide of the Os Metacarpi, that ſuſtains the Index. Origin.

Is inſerted by two tendons, like the Interoſſei, i. e. by a ſhort one into the upper part of its firſt bone laterally; and by a broad and long one into the upper part of its laſt bone, being united with the Muſculus Interoſſeus primus. Inſertion.

The ſhort tendon draws the Index from the reſt, and ſo may retain the appellation of Abductor; the long tendon aſſiſts this Interoſſeus in extending the third or laſt joint of the fore-finger. Uſe.

*This muſcle is wanting in a dog.*

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* Interoſſeus prior Indicis. Albin.

### ABDUCTOR *

Origin. ARISES broad and fleſhy from the ſuperior part and outſide of the firſt bone of the thumb.

Inſertion. Is inſerted by a ſhort tendon into the upper part of the firſt bone of the fore-finger, laterally, next the thumb.

Uſe. Its uſe is to bring the Index towards the thumb, by drawing it from the middle finger; whence, in reſpect of THIS, it may be ſtiled Adductor, and in reſpect of THAT Abductor.

*This is wanting in a dog.*

## CHAP. XXXVI.

## Of the muſcles of the LITTLE-FINGER.

THE Digitus Auricularis has three proper muſcles, and one common to it with the Extenſor Communis, reckoned by ſome a proper muſcle, and named

EXTENSOR

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* Adductor Pollicis. Cowp.
Le Demi-interoſſeux de l'Index. Winſl.

## EXTENSOR MINIMI DIGITI.

It is ſaid to ariſe from the external protuberance of the Humerus, and from the upper part of the Ulna; but, in my opinion, it ought not to be reckoned a muſcle diſtinct from the Extenſor communis, becauſe it cannot be ſeparated from it without cutting. Truth it is, it paſſes its tendon under a Ligamentum annulare, diſtinct from the other three tendons, but that is far from being ſufficient to conſtitute a particular muſcle.

N. B. It is commonly inſerted by two tendons; beſides which the little finger has often another tendon from the Extenſor communis.

All that prominent, ſoft, fleſhy maſs, that lies on the Os Metacarpi minimi Digiti, in the palm of the hand, is called in Greek, Hypothenar, in as much as it is placed below that part called Thenar. This I find always eaſily diviſible into three muſcles, viz.

## EXTENSOR TERTII INTERNODII MINIMI DIGITI *

Origin. ARISES fleſhy, mixed with ſome tendinous fibres from the bone of the Carpus, that ſtands upon the third of the firſt rank, as alſo from the ligament that ties that bone to the Os Metacarpi of the little finger.

Inſertion. Is inſerted after the manner of the Interoſſei, i. e. by a ſhort tendon into the upper part of the firſt bone of this finger laterally, and by a long tendon into the upper part of the laſt bone, having joined the Interoſſeus of the other ſide.

Uſe. Its uſe is to help to extend this laſt joint, and to draw the finger from the reſt when the ſhort one only acts.

* Abductor minimi Digiti. Albin.
Le petit Hypothenar. Winſl.

ABDUCTOR

## ABDUCTOR MINIMI DIGITI, HYPOTHENAR Riol. [*]

Origin. ARISES fleſhy from the thin protuberating part of the eighth bone of the wriſt.

Inſertion. Is inſerted by a pretty long and round tendon, on the inſide of the ſhort tendon of the above deſcribed muſcle, near the upper part of the firſt bone of this finger.

Uſe. It ſerves not only to abduce the little finger from the reſt, but alſo to bend it a little.

## FLEXOR PRIMI INTERNODII MINIMI DIGITI [†]

Origi ARISES tendinous and fleſhy from the inferior part of the thin edge of the eighth bone of the wriſt, and from all the inner ſide of the Os Metacarpi, that ſuſtains this finger: at the condyle or

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[*] Flexor parvus minimi Digiti. Albin.

[†] Adductor Oſſis Metacarpi minimi Digiti. Albin.

Le Metacarpien. Winſl.

round part of this bone it divides into two tendons, which are inſerted on each ſide of the upper part of the firſt bone of the finger.

Uſe. Its uſe is to aſſiſt in bending the firſt internode of the little finger.

*Theſe three are wanting in a dog.*

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## CHAP. XXXVII.

## Of the muſcles of the THUMB.

THE Thumb, or Pollex Manûs, which is equal in ſtrength to all the reſt of the fingers, oppoſite to which it is placed like another hand, is moved by nine muſcles.

### FLEXOR TERTII INTERNODII *

Origin. ARISES by an acute fleſhy beginning from the upper part of the Radius, a little below the termination of the Biceps, which origin is continued down for ſome ſpace on the fore part of this bone, in a double order of ſhort fleſhy fibres, ending in the tendon that runs in their middle.

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* Flexor longus Pollicis Manus. Albin. & Winſl.

Is inſerted into the third or laſt bone of the thumb, having paſſed its tendon under the ſeveral annular ligaments that come from one ſide of its ſecond bone to the other ſide. Inſertion.

Its uſe is to bend this laſt joint. Uſe.

### FLEXOR SECUNDI INTERNODII *

This may be divided into two diſtinct muſcles, between which the tendon of the former muſcle runs. The outermoſt ariſes from the bone of the Carpus, with which the thumb is joined. The innermoſt ariſes from part of the ſame bone, and alſo from the upper part of the Os Metacarpi Indicis, and medii Digiti, in common with the Adductor. They are both Origin.

Inſerted into the two Oſſa Seſamoidæa of the ſecond joint of the thumb. Inſertion.

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* Flexor brevis Pollicis Manus. Albin.

Uſe. Their uſe is to bend this joint or internode.

### Flexor primi Internodii *

Origin. Arises fleſhy from the Ligamentum tranſverſale, and the bone of the Carpus that articulates with the thumb, lying under the Abductor.

Inſertion. Is inſerted fleſhy into all the inſide of the firſt bone of the thumb.

Its uſe is to bend this joint.

### Extensor primi Internodii †

Origin. Arises fleſhy from the upper and external part of the Ulna, immediately below the termination of the Anconæus, from the back part of the Radius, below its Supinator Brevis, and from the membranous ligament that ties theſe two bones together.

Inſertion. Is inſerted always by two, and very often by three diſtinct tendons; the firſt is a large and round tendon, which ſeems to be a bundle of a great many ſmall

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* Opponens Pollicis. Albin.

† Abductor longus Pollicis. Albin.

ſmall ones, terminating into the upper part of the firſt bone of the thumb; the ſecond tendon is loſt in the fleſhy beginning of the Abductor Pollicis; and the third, which in ſome ſubjects is wanting, is implanted into that bone of the Carpus that articulates with the thumb.

Its uſe is to extend the firſt bone of the Pollex. Uſe.

### EXTENSOR SECUNDI INTERNODII *

ARISES fleſhy from the back part of the Radius, about the middle of the fleſhy belly of the former, unto which in its deſcent it firmly adheres; it has a ſecond origin from ſome part of the membranous ligament. Origin.

Is inſerted into the upper part of the ſecond bone of the thumb. Inſertion.

Its uſe is to extend the ſecond internode. Uſe.

EXTENSOR

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* Extenſor minor Pollicis. Albin.

N. B. Winſlow deſcribes this and the preceding muſcle as one, under the name of Le premier Extenſeur du Pouce.

### EXTENSOR TERTII INTERNODII *

Origin. ARISES by an acute, tendinous and fleſhy beginning from the Ulna, a little below the origin of the firſt Extenſor, as likewiſe from the ligament that connects the two bones. Its tendon runs in a proper channel at the extremity of the Radius.

Inſertion. Is inſerted into the third and laſt bone of the Pollex.

Uſe. Its uſe is to extend the laſt joint, in bringing it backwards.

### ABDUCTOR, THENAR Riol. †

Origin. ARISES by a broad, tendinous and fleſhy beginning from the tranſverſe ligament of the Carpus, and from one of its bones that articulates with the thumb.

Inſertion. Is inſerted tendinous into the ſecond joint of the Pollex Digitorum Manûs.

Its

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* Extenſor major Pollicis. Albin.
Le ſecond Extenſeur du Pouce. Winſl.

† Abductor brevis Pollicis Manus. Albin.

Its uſe is to draw the thumb from the fingers. Uſe.

### ADDUCTOR AD INDICEM, ANTITHENAR Riol.

ARISES from the outſide of the upper part of the Os Metacarpi Indicis. Origin.

Is inſerted into the firſt joint of the thumb, ſending off a thin tendon, which runs along with the Extenſor Pollicis longus. Inſertion.

Its uſe is to draw the thumb nearer the fore-finger. Uſe.

### ADDUCTOR AD MINIMUM DIGITUM*

ARISES a little tendinous, but chiefly fleſhy from the whole length of the metacarpal bone, that ſuſtains the middle finger, from thence its fibres contracting equally on both ſides do run up to the thumb. Origin.

Is inſerted into its ſecond joint, a little below one of its ſeed-like bones. Inſertion.

Its uſe is to bring the thumb towards the ring and little-finger. Uſe.

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* Adductor Pollicis Manus. Albin.

*The thumb of a dog, or that range of bones ſet off at ſome diſtance from the other fingers, or claws, is only provided with one Extenſor, and one Flexor.*

*Extenſor, the origin, progreſs and termination of this muſcle is very little different from the Extenſor tertii Internodii Pollicis in man, being a thin, flat muſcle, partly tendinous, and partly fleſhy, which fills up the cavity or hollowneſs between the Ulna and Radius.*

*Flexor is an exceeding ſmall muſcle, which ariſeth fleſhy from one of the bones of the Carpus, and ends ſo into the ſecond Internode of what is analogous to a thumb in this animal.*

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## CHAP. XXXVIII.

## Of the muſcles of the RADIUS.

THE Radius, or ſecond bone of the cubit, is bended and extended by the muſcles of that part already deſcribed in common with the Ulna; but beſides, it has four muſcles ſubſervient to its own motions of pronation and ſupination.

### PRONATOR TERES

ARISES fleſhy from the Os Humeri, a little above its internal protuberance, tendinous and fleſhy from that proceſs, and entirely tendinous from the anterior Apophyſes of the Ulna. Origin.

Is inſerted thin and tendineo-carnous into the middle of the external part of the Radius. Inſertion.

Its uſe is to turn the Radius, together with the Carpus and whole hand inwards, and the palm downwards; which motion is called pronation. Uſe.

### PRONATOR QUADRATUS

ARISES broad, membranous and fleſhy from the lower and inner part of the Ulna, and paſſing tranſverſely, Origin.

Is inſerted, of the ſame breadth, into the external and lower part of the Radius. Inſertion.

Its uſe is to aſſiſt the former in the prone poſition of the hand. Uſe.

*In a dog it lies upon the membrane that joins the two bones of the cubit together, to both which it adheres, and near the lower end of the Ulna it ſends off a tendon obliquely to the extremity of the Radius, where it terminates.*

### SUPINATOR LONGUS

Origin. ARISES acute and fleſhy from the external ridge of the Os Humeri, two or three fingers breadth above the beginning of the Bicornis.

Inſertion. Is inſerted into the external and inferior part of the Radius, near the Carpus.

Uſe. Its uſe is to turn the Radius, &c. outwards, and the palm of the hand upwards, which motion is called Supination.

*This is wanting in a dog.*

### SUPINATOR BREVIS

Origin. ARISES tendinous from the external protuberance of the Os Humeri, and tendineo-carnous from the external and upper part of the Ulna, adhering ſtrictly to the membrane that involves the articulation of theſe two bones.

Is inſerted into the inſide of the Radius above, but chiefly below, the inſertion of the Biceps. Inſertion.

Its uſe is to aſſiſt the former in pulling the Radius backwards in the ſupine poſition of the hand. Uſe.

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## CHAP. XXXIX.

## Of the muſcles of the THIGH.

THE Os Femoris, or thigh-bone, has ſixteen muſcles.

### PSOAS MAGNUS

ARISES fleſhy from the body of the lowermoſt Vertebra Thoracis laterally, from the ſides of all the Vertebræ of the loins by ſo many carnous diſtinct ſlips, and a little tendinous from all their tranſverſe proceſſes; Origin.

Is inſerted tendinous into the leſſer Trochanter of the Os Femoris, and fleſhy Inſertion.

fleſhy into the bone a little below that proceſs.

Uſe. Its uſe is to bend the thigh, by bringing it forwards.

### ILIACUS INTERNUS

Origin. ARISES fleſhy from all the inner lip of the ſemicircular part of the Ilium, from the edge of that bone between its anterior ſpine and the Acetabulum, and from moſt of its Coſta or hollow part. It joins in with the former, where it begins to become tendinous, in common with which it is inſerted.

Uſe. Its uſe is to bend the thigh, and bring it directly forwards in progreſſion.

### PECTINALIS *

Origin. ARISES broad and fleſhy from the ſpine, or ſuperior and inner part of the Os Pubis.

Inſertion. Is inſerted into the Os Femoris, a little below the leſſer Trochanter, by a flat and ſhort tendon.

Uſe Its uſe is to bend the thigh bone, by drawing it upwards.

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* Pectineus. Albin.

*In a dog it ariſes by a round and fleſhy beginning from the Os Pubis, and ſoon turns into a broad and thin tendon, which terminates at the inner condyle of the Femor.*

### GLUTÆUS MAXIMUS

ARISES fleſhy from the upper part of the Os Coccygis, membranous and fleſhy from all the double ſpines of the Os ſacrum, and one or two of its lowermoſt ſingle ones, from all the external edge of that bone, below the poſterior ſpine of the Os Ilium, from two ligaments that run from the Iſchion to the Os ſacrum; i. e. one from its ſharp proceſs, the other from its Tubercle (over which part of this muſcle hangs in a large fold) and entirely fleſhy from more than one half of the circular edge of the Ilium, from the reſt of which forwards it ſprings by a thin and broad tendon, through which one may diſcover part of the ſubjacent muſcle, being inſeparably joined to that of the Membranoſus. Origin.

Is inſerted by a large and thick tendon into the Femur, at a very conſiderable roughneſs at one ſide of the upper Inſertion.

part of the Linea Femoris aſpera, a little below the great Trochanter.

Uſe. Its uſe is to extend the thigh, by pulling it directly backwards.

### GLUTÆUS MEDIUS

Origin. ARISES fleſhy from all the outer lip or edge of the ſpine of the Ilium, except its poſterior part, where it ſprings from the Coſta of that bone.

Inſertion. Is inſerted into the breadth of the great Trochanter by a broad tendon, which runs after an oblique manner.

Uſe. Its uſe is to aſſiſt the former.

### GLUTÆUS MINIMUS

Origin. ARISES fleſhy from the lower part of the outer or back ſide of the Os Ilium, forwards from the edge of its anterior ſpine, and backwards from the edge of its great Sinus.

Inſertion. Is inſerted by a large tendon along the fore and upper part of the great Trochanter, and by a ſmall one into the neck of the Os Femoris.

N. B. I mean ſome part of the tendinous fibres of the Glutæus minimus are ſpread upon the membrane which involves that part of the bone.

Its uſe is to aſſiſt the two former in extending the thigh. Uſe.

*In a dog I call the firſt Glutæus Externus, it ariſes membranous from almoſt all the external part of the ſpine of the Ilium, which joining with another fleſhy beginning from the Sacrum, and from the ligament that is extended between that bone and the Iſchium, it becomes altogether carnous about the middle of the muſcle that lies under it, and terminates tendinous a little below the great Trochanter externally.*

*The ſecond, or Medius, is by far the largeſt, and ariſes fleſhy from all the ſpine of the Ilium, filling up the hollow part of that bone, being inſerted tendinous into the upper and external part of the great Trochanter.*

*The third, or Internus, ariſes fleſhy from the middle of the Os Ilium externally, adhering in its deſcent to both its ſides; the ſuperior and inner part of the great Trochanter being the place of its partly tendinous, and partly fleſhy inſertion.*

### PYRIFORMIS, ſeu ILIACUS EXTERNUS,

Origin. ARISES thick, broad, and fleſhy from the inferior part of the Os ſacrum next the Ilium; from which bone alſo it derives ſome part of its origin, growing gradually narrower it becomes tendinous, and

Inſertion. Is inſerted into the upper part of the dent or cavity, at the root of the great Trochanter.

Uſe. Its uſe is to move the Os Femoris upwards, and turn it ſomewhat outwards.

### MARSUPIALIS, ſeu OBTURATOR INTERNUS,

Origin. ARISES fleſhy from the Os Ilium, Iſchium and Pubis, round the internal circumference of the great hole common to the two laſt named bones. Its inſide is tendinous, being divided into ſeveral ſmall ones, which unite before its termination.

Is inſerted tendinous into the dent or cavity, at the root of the great Trochanter. Inſertion.

Its uſe is to aſſiſt the former, in moving the Os Femoris obliquely, and ſemicircularly outwards. Uſe,

### GEMINI

Are two very diſtinct muſcles united by a carnous membrane, both above and below, forming as it were a Marſupium, or purſe, for the reception of the tendon of the laſt deſcribed muſcle. The ſuperior ariſes from the acute proceſs of the Iſchium, and the inferior from the outer part of the knob, or blunt protuberance of that bone, as alſo from the ligament that runs from thence to the Os Sacrum. They are both Origin.

Inſerted fleſhy into the cavity of the great Trochanter. Inſertion.

Between theſe two ſmall muſcles the tendon of the Marſupialis runs to its inſertion, and they ſerve not only to turn the Os Femoris outwards, but to preſerve Uſe.

ſerve that tendon from being hurt by the hardneſs of the ſinuoſity of the Iſchium which it paſſes through, as alſo to hinder it from ſlipping out of that cavity, while the muſcle is in action.

### QUADRATUS FEMORIS

Origin. ARISES broad, tendinous, and fleſhy, from the outſide of the protuberance of the Os Iſchii, and paſſing tranſverſely

Inſertion. Is inſerted into the outſide of the great Trochanter, reaching as low down as the little one.

Uſe. Its uſe is to bring the thigh bone outwards.

*In a dog it ariſes from the Tubercle of the Iſchium, and fore part of the ſame bone near the great Foramen.*

### TRICEPS

Under this appellation are comprehended four very diſtinct muſcles, which, from their uſe, I name as follows:

### ADDUCTOR FEMORIS PRIMUS *

ARISES by a ſtrong roundiſh tendon, from the upper part of the Os Pubis, next the Pectinæus above the Gracilis; which turning into a compact fleſhy belly, it begins to be Origin.

Inſerted tendinous about the middle of the Linea aſpera, being continued down upon the ſame five or ſix inches, ſending out a tendon which joins in with that of the fourth head. Inſertion.

### ADDUCTOR FEMORIS SECUNDUS †

ARISES from the Os Pubis, immediately under the Gracilis, by a broad, tendinous, but chiefly fleſhy beginning, and Origin.

Is inſerted into the Linea aſpera, from a little below the leſſer Trochanter, to the firſt inſertion of the laſt deſcribed muſcle. Inſertion.

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* Adductor longus Femoris. Albin.
Le premier Muſcle du Triceps. Winſl.

† Adductor brevis Femoris. Albin.
Le ſecond Muſcle du Triceps. Winſl.

### ADDUCTOR FEMORIS TERTIUS *

Origin. ARISES lower down than the former, from the outward edge of the Os Pubis and Iſchium; and running obliquely towards the Trochanter minor,

Inſertion. Is inſerted near the Glutæus maximus.

### ADDUCTOR FEMORIS QUARTUS

Origin. ARISES from the protuberance of the Iſchium, and the adjoining interior part of that bone, by a tendinous and fleſhy origination

Inſertion. Is inſerted by a round and long tendon into the upper and rough part of the inner and lower appendix of the Os Femoris, being affixed to that bone a little above the condyle, as alſo to ſome part of the Linea aſpera.

The

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* N. B. The third and fourth Adductor of our author, are deſcribed as one muſcle by Albinus and Winſlow, under the names of Adductor magnus Femoris, and le troiſieme Muſcle du Triceps.

The uſe of all theſe four muſcles is to adduce or move the thigh-bone inwards, according to their different directions. Uſe.

### OBTURATOR EXTERNUS

ARISES fleſhy from all the lower part of the Os Pubis and Iſchium, round the outer circumference of their great Foramen, adhering firmly to its membrane. Origin.

Is inſerted by a ſtrong tendon into a cavity at the root of the great Trochanter. Inſertion.

Its uſe is to turn the thigh-bone obliquely outwards. Uſe.

*In a dog there is yet obſervable a ſmall fleſhy muſcle ariſing from the Os Ilium, near the edge of its cavity, called Acetabulum; and running obliquely over the articulation of the Femor, is inſerted into that bone between the Vaſtus internus and Cruræus. I name it Muſculus parvus in articulatione Femoris ſitus.*

# CHAP. XL.

## Of the muſcles of the Os Coccygis.

THE bone joined to the extremity of the Os ſacrum, called Coccyx, has one muſcle on each ſide, which I call

### Coccygæus ***

Origin. It ariſes tendineo-carnous from the acute proceſs of the Os Iſchium, between the ligament that reaches from thence to the Os ſacrum, and one of the heads of the Gemini: from this narrow beginning it gradually dilates itſelf into a thin fleſhy belly, interſperſed with ſome tendinous fibres.

Inſertion. Is inſerted into the whole length of the Os Coccygis laterally, as alſo into the inferior part of the Os ſacrum in ſome ſubjects.

Uſe. Its uſe is to draw that bone inwards or forwards, after the excretion of hardened Fæces, &c.

N. B. The two ligaments that antagoniſe this pair of muſcles, ſhall be exactly deſcribed in my Human and Comparative Oſteology, which I deſign to publiſh in a ſhort time. In my enquiry after a muſcle mentioned by the famous Riolan, under the name of Levator Ani quintus, which he ſays Coccygi & Oſſis ſacri extremo affigitur, I happily diſcovered this muſcle.

*The tail of a dog, which is only an elongation of this bone, is furniſhed with abundance of muſcles ſubſervient to its many motions: but with their particular deſcriptions, I think it needleſs either to trouble myſelf or the reader.*

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## CHAP. XLI.

## Of the muſcles of the LEG.

THE leg, made up of two bones, called Tibia and Fibula, has eleven muſcles; of which, thoſe that ariſe from the Os Innominatum, and are inſerted into either of theſe two bones, are reckoned common both to the thigh and leg, whereas thoſe which ſpring from the Os Femoris, and end in the Tibia, are accounted proper to the leg only.

### MEMBRANOSUS *

Origin. ARISES by a narrow, tendinous and fleſhy beginning, from the fore part of the ſpine of the Ilium externally ; a little below the great Trochanter its fleſhy belly grows wholly tendinous, and covers the two Vaſti and Rectus, being firmly affixed to all the Linea aſpera, in its deſcent.

Inſertion. Its proper termination is into the ſuperior appendix of the Tibia laterally, between its tubercle and the head of the Fibula, ſending down an expanſion to envelope the Tibialis Anticus. From the inſide of the thigh it is continued down upon the leg, without any remarkable adheſion to the head of the Tibia in its way thither.

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* Tenſor Vaginæ Femoris. Albin.

Le Muſcle Aponeurotique, ou Muſcle du Faſcia lata. Winſl.

Uſe.

Its uſe is to extend the leg, and turn it a little outwards; and by virtue of its large Aponeuroſis, it mightily ſtrengthens the action of the muſcles, over which it is ſpread, by keeping them tight in their places, &c.

*In a dog it is divided into two very diſtinct muſcles: the ſuperior ſprings from the ſpine, and half the Coſta of the Os Ilium, forming a thick fleſhy belly as it deſcends ſtraight upon the Rectus; and about three or four inches below its origin, it dilates into a membranous tendon, by which it is inſerted into the Patella and head of the Tibia. Which Faſcia, or tendinous expanſion, is extended and ſpread over that of the Biceps; and together with it, covers all the muſcles of the ſame ſide down to the foot. Now the contrary diſpoſition or decuſſation of the fibres of theſe two Faſciæ, do very much ſtrengthen the action and augment the force of the muſcles that lie under them.*

*The inferior ariſes from the lower part of the ſuperior Coſta of the Ilium, thin and fleſhy, a little below that it becomes membranous, and is expanded over the two Vaſti and*

*Rectus, firmly adhering to the inſide of the thigh-bone; its tendinous expanſion joins in with that of the Glutæus Medius below the great Trochanter.*

### SARTORIUS

Origin. ARISES tendinous from the fore part of the ſpine of the Os Ilium internally, but ſoon becomes fleſhy; and deſcending, runs down for ſome ſpace upon the Rectus, and then going obliquely inwards, it paſſes over the Vaſtus internus, and about the middle of the Os Femoris, over part of the Triceps, between the tendon of which and the Muſculus Gracilis it deſcends farther.

Inſertion. Is inſerted tendinous into the fore part of the Tibia internally, near its ſpine, at a little diſtance from the lower part of its appendix.

Uſe. Its uſe is to move the leg obliquely, or bring one leg and thigh croſs the other.

*In a dog it ariſes fleſhy from the Coſta near the ſpine internally, and ends near the upper*

*upper part of the inſide of the ridge that is in the middle of the Tibia.*

### RECTUS*

ARISES fleſhy from a tubercle in the lower part of the anterior ſpine of the Ilium, and tendinous from the Coſta Ilii, a little above the Acetabulum. Origin.

Is inſerted tendinous into the upper part of the Os Patellæ. Inſertion.

Its uſe is to extend the leg. Uſe.

*In a dog it ariſes tendinous and fleſhy from the lower part of the Coſta Oſſis Ilii, and forming a large round fleſhy body deſcends, as in men.*

### VASTUS EXTERNUS

ARISES broad, tendinous, and fleſhy from the great Trochanter and upper part of the Linea aſpera. Origin.

Is inſerted into the head of the Patella laterally. Inſertion.

N. B. Its origination is continued from near the inſertion of the Glutæus minimus obliquely outwards over the great Trochanter to the Linea aſpera; or rather,

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* Le Droit, ou Greſle anterieur. Winſl.

ther, this muſcle has a ſecond origination from all that rough line, by fleſhy fibres, which run obliquely forwards to a middle tendon, where they terminate.

Uſe. Its uſe is to extend the leg.

### VASTUS INTERNUS

Origin. ARISES tendinous and fleſhy from between the fore part of the Os Femoris and the little Trochanter, and from almoſt all the inſide of the Linea aſpera, with fibres running obliquely forwards and downwards.

Inſertion. Is inſerted tendinous into the inſide of the Patella, continuing fleſhy lower down than the laſt; and from its inſerting tendon there runs off an Aponeuroſis to the muſcles below the head of the Tibia.

Uſe. Its uſe is to extend the leg in bringing it upwards.

N. B. From the lower point of the Patella there goes a ſtrong, thick ligament, which is affixed to a Tubercle on the fore and upper part of the Tibia; by virtue of which, the extenſion of the leg is as eaſily performed as if the tendons of the extending muſcles were inſerted there.

*In a dog the Vaſtus internus ariſes from the neck of the Femur internally.*

### CRURÆUS

ARISES fleſhy from between the two Trochanters of the Femur. It firmly adheres to moſt of the fore part of the Os Femoris, and Origin.

Is inſerted tendinous into the Patella, under the Rectus. Inſertion.

Its uſe is to aſſiſt in the extenſion of the leg or Tibia. Uſe.

*A dog has a fifth Extenſor; which, becauſe it muſt be demonſtrated firſt, I call Extenſor Tibiæ primus Cani proprius. It ariſes from the ſpine and half the Coſta of the Ilium: in its deſcent it adheres to the Sartorius by a membrane, and terminates into the Patella.*

### GRACILIS *

ARISES by a thin and broad tendon from the Os Pubis, near its commiſſure; it Origin.

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* Le Greſle interne, ou Droit interne. Win.

it ſoon grows fleſhy, and deſcending by the inſide of the thigh

Inſertion. Is inſerted tendinous into the inſide of the Tibia near the Sartorius.

Uſe. Its uſe is to bend the thigh and leg inwards.

*In a dog it ariſes by a ſmall tendon from the tuberoſity of the Iſchium, which aſcends obliquely to the lower and fore part of the Os Pubis, where going a little croſs in a ſtraight line it meets with that of its ſellow on the other ſide, whereby the two muſcles become united. Near its termination it ſends off a tendon that runs down upon the Tibia, and alſo a broad membranous expanſion, which, uniting with that of the Biceps and Membranoſus, is continued all over the leg and foot.*

### SEMI-NERVOSUS *

Origin. ARISES fleſhy, in common with the longeſt head of the Biceps, from the back part of the protuberance of the Iſchium.

Inſertion. Is inſerted by a flat tendon at the inſide of the ridge of the Tibia, about an inch below the termination of the ligament that comes from the Patella. From its tendon, about the head of the Tibia, there goes off a tendinous expanſion continued down over the muſcles on the inſide of the leg.

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* Semi-tendinoſus. Albin.

Its uſe is to bend the leg backwards, and bring it a little inwards. Uſe.

### SEMI-MEMBRANOSUS

ARISES tendinous from the upper part of the tuberoſity of the Iſchium. In its deſcent it runs under the head of the Biceps, between which and the former muſcle it runs down the back ſide of the thigh. Origin.

Is inſerted tendinous into the ſuperior and back part of the head of the Tibia, where ſome part of its tendon is mixed with a ligament that comes from the Tibia and ends in both condyles; or perhaps the ligament ſprings from the latter, and ends in the former. Inſertion.

Its uſe is to bend the leg, by bringing it directly backwards. Uſe.

## BICEPS.

Origin. This muſcle has two beginnings; its ſuperior head ariſes tendinous and fleſhy in common with the Semi-nervoſus, from the tuberoſity of the Iſchium; the inferior ariſes from the Linea aſpera, a little below the termination of the Glutæus major, by a fleſhy acute beginning, which ſoon grows broader as it deſcends to join in with the other.

Inſertion. Is inſerted tendinous into the upper part of the head of the Fibula, part of its tendon reaching to the head of the Tibia next to it.

N. B. Near its inſertion it parts with a tendinous expanſion, which covers the muſcles lying on the outſide of the leg.

Uſe. Its uſe is to bend the leg.

*In a dog the thickeſt and largeſt beginning of this muſcle ariſes partly from the knob of the Iſchium, and partly from a ligament that goes from the Os ſacrum to the aforeſaid protuberance. In its deſcent it ſpreads itſelf into a broad* *a broad and fleſhy belly, which covers part of the Gaſtrocnæmius. The other head, which is very ſmall, round and fleſhy, ariſes by a long and ſmall tendon from the ſame ligament. Theſe two join and unite about the ham; a little lower they grow tendinous, and are ſo inſerted into the upper and fore part of the ridge of the Os Tibiæ. This muſcle ſends off a very broad and tendinous expanſion, which covers all the muſcles on the outſide of the leg, firmly adhering to the middle of the fore part of the Os Tibiæ in its deſcent to the foot: the poſterior part of this Faſcia is formed into a diſtinct tendon, which joining in with the Chorda magna, ends in the Os Calcis.*

## POPLITÆUS.

ARISES by a round tendon from the edge of a cavity in the lower part of the external condyle of the Femur backwards; then running under the ligament that involves the joint, and ſtrictly adhering to part of the Cartilago lunata, it becomes fleſhy as it perforates the ligament, and joins in with another fleſhy beginning proceeding from the ſame membrane. Origin.

Inſertion. Is inſerted into the ſuperior part of the Tibia internally.

Uſe. Its uſe is to move the leg obliquely outward, and aſſiſt in bending the ſame.

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## CHAP. XLII.

## Of the muſcles of the Foot.

THE foot, or Tarſus, is moved by ſix muſcles.

### Extensor Tarsi Suralis, vel Extensor magnus,

Is made up of four heads or beginnings; the two outermoſt form the muſcle, commonly called Gaſtrocnæmius externus and Gemellus.

Origin. One of them ariſes from the back part of the internal condyle of the Femur, and from the bone itſelf, a little above it, by two thick and ſhort tendons. The other head ariſes tendinous from a little knob on the outer condyle, juſt above the beginning of Poplitæus, but ſoon turns fleſhy. A little below the joint their carnous bellies unite in a middle tendon; and below the middle of the Tibia it ceaſes to be fleſhy.

Origin The two innermoſt are known by the names of Gaſtrocnæmius internus and Solæus: one head comes from the upper and back part of the appendix of the Fibula, continuing to derive ſome of its fleſhy Fibrillæ from the poſterior edge of that bone, for ſome ſpace below the meeting of the tendons. The other head ſprings from the back part of the Tibia, about the middle of the fleſhy part of the Poplitæus, and from thence it is continued down the edge of the bone as low as the other.

The tendons of theſe four heads join, and make one great tendon, called Chorda magna, and Tendo Achillis.

Inſertion Is inſerted into the ſuperior and hindermoſt part of the Os Calcis, which projecting beyond the Os Tibiæ, occaſions a conſiderable diſtance between the tendon and that bone. The middle and upper part of theſe two inferior heads, between the bones whence they ſpring, is adorned with a tendinous edge, in form of an arch, under which all the great veſſels, &c. of the leg paſs.

Uſe. Its uſe is to extend the foot, in bringing it backwards and downwards.

*This great Extenſor in a dog has but two beginnings, and thoſe tendinous and fleſhy from the two Oſſa ſeſamoidæa, that adhere to the two Condyles of the Femur, and fleſhy from the lower part of the ſame bone.*

### EXTENSOR TARSI MINOR, vulgò PLANTARIS *

Origin. ARISES narrow, thin and fleſhy from the upper and back part of the external protuberance of the Os Femoris, adhering to the membrane that involves the joint in its deſcent. It ſoon becomes a long, ſlender, thin tendon, which emerging from between the fleſhy bellies of the Extenſor magnus, marches by the inſide of its great tendon, and

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* Le Jambier Greſle. Winſl.

Is inſerted at the extremity of the Os Calcis, below the Chorda magna, and ſometimes alſo it ends into the ſame bone by two tendons laterally. Inſertion.

Its uſe is to aſſiſt the former in the extenſion of the foot. Uſe.

*In a dog the fleſhy belly of this muſcle ariſes in common with the Flexor Digitorum communis, to which it adheres inſeparably a good way down; its tendon is very diſtinct, and ends in the Os Calcis.*

N. B. The tendinous Aponeuroſis, expanded over the muſcles in the bottom or ſole of the foot, immediately under the fat, ariſes by two narrow beginnings from the inferior and poſterior part of the Os Calcis, hard by the origin of the Muſculus ſublimis. The largeſt adheres firmly to the fleſhy part of that muſcle, its membranous edge being ſpread upon the adjacent Abductor Pollicis, and is tacked down between theſe two muſcles to the bones. It ſplits into four tendons, each of them being ſoon after ſubdivided into two, between which the Flexores Digitorum paſs. Is inſerted into both ſides of that cartilaginous body that covers the firſt joint of the toes. The other beginning of this Expanſio tendinoſa comes from the ſame bone, but more externally, and going forwards covers one half of the Abductor minimi Digiti, being joined to the former by a thin tendon. Is inſerted partly into the upper part of the Os Metatarſi minimi Digiti, and partly by a long tendon into the extremity of the Os Metatarſi, near its articulation with the third toe. Its uſe is to preſerve the ſubjacent parts from being compreſſed in ſtanding, walking, &c. as alſo to aſſiſt the flexion of the firſt joint of the toes, by pulling that cartilaginous body downwards.

### TIBIALIS ANTICUS

Origin. ARISES tendinous and fleſhy from the middle of the upper appendage of the Tibia externally; laterally it runs down upon the outſide of the Tibia, receiving a fleſhy diſgregated origination from that bone, near the membrane that connects it to the Fibula, as alſo from the membrane itſelf. It paſſes under an annular ligament about the lower part of the Tibia.

Inſertion. Is inſerted by a very large tendon into the inſide of the Os cuneiforme majus, next the metatarſal bone of the great toe, and by a ſmall one into the upper part of the laſt named bone laterally.

Uſe. Its uſe is to bend the foot, by drawing it upwards.

*In a dog it ariſes fleſhy from the upper and fore part of the Tibia, filling up all that cavity that is between the Extenſor Digitorum Pedis communis, and a thin bony protuberance or ridge, obſervable about the upper part of this bone, to which, in its deſcent, it firmly adheres. A little below its imbanding ligament it parts with a ſmall tendon, that runs upon all the joints of the Pollex Pedis, or great toe, which it ſerves to extend.*

## TIBIALIS POSTICUS

Origin. ARISES by a narrow fleſhy beginning from the fore part of the Os Tibiæ, juſt under its appendix next the Fibula; thence paſſing through a perforation in the upper part of the ligament that connects the two bones, it continues its origin from the back part of the laſt named bone internally, and from near one half of the upper part of the Tibia, as alſo from the membranous ligament between them.

Inſertion. Is inſerted, having paſſed through the Fiſſure at the inner ankle, tendinous into the upper part of the Os naviculare internally laterally, being farther continued to the ſide of the Os cuneiforme medium; beſides, it gives ſome tendinous fibres to the Os Calcis, and to the Flexor Pollicis brevis.

Uſe. Its uſe is to bring the foot inwards.

*In a dog this is but a very ſmall muſcle, ariſing fleſhy from the back part of the Fibula and Tibia, between the Flexor Digitorum profundus, and the Sub-poplitæus; it turns into a long ſlender tendon about the middle of the laſt named bone; and then it unites with that of the fore-mentioned Flexor, a little before it divides in its paſſage to the toes.*

PERONÆUS

### PERONÆUS PRIMUS, ſeu POSTICUS,*

Origin.

ARISES tendineo-carnous from the fore part of the head of the Perone, and ſoon grows into a pretty round fleſhy belly, made up of ſtraight and compacted fibres; it has alſo another beginning, by a great many thin and fleſhy fibres, from the upper and external part of the Fibula, where it begins to riſe into a round edge, as alſo from the hollowneſs between that and its anterior ridge. It paſſes its long tendon through the channel at the outer ankle, together with the following; then being reflected into the ſinuoſity of the Calcaneum, it runs along the cavity, made in the Os cuboides, under the muſcles in the ſole of the foot.

Inſertion.

Is inſerted in the outſide of the ſuperior part of the Os Metatarſi that ſupports the great toe, and by ſome tendinous fibres into one of the Oſſa cuneiformia next it.

N. B. The

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* Peronæus longus. Albin. & Winſl.

N. B. The cartilaginous bone in the tendon of this muſcle, firſt (I think) taken notice of by Veſalius, I have obſerved to be hollowed or ſinuated, for the better reception of a little protuberance in the edge of the Os cuboides, upon which it plays, as on a pully.

Uſe Its uſe is to move the foot outwards, and alſo to bend it a little.

*In a dog it ariſes fleſhy, and a little tendinous from the outſide of the Perone, juſt where it begins to adhere cloſely to the Tibia, from ſome part of which it alſo continues a carnous origin; ends in the Os Metatarſi that ſuſtains the fore toe.*

PERONÆUS SECUNDUS, ſeu ANTICUS, *

Origin. ARISES by an acute fleſhy beginning from above the middle of the external part of the Fibula; it has another carnous origination from the outer ſide of the anterior ſpine of this bone, as alſo from its round edge externally backwards. Its tendon paſſes through the fiſſure of the external ankle, being there included under the ſame ligament with that of the preceding muſcle, and a little farther it runs under a particular one of its own.

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* Peronæus brevis. Albin.
Le moyen Peronier. Winſl.

Inſertion. Is inſerted into the upper and fore part of the Os Metatarſi, that ſupports the little toe by ſeveral tendinous filaments, one or two of which are carried ſtraight down, and join in with the tendon that extends that toe.

Uſe. Its uſe is to pull the foot and toes outwards.

*In a dog it ariſes from a protuberance in the head of the Tibia laterally, next the Perone, from the upper part of which it ariſes alſo, and then proceeds as in man.*

CHAP.

# CHAP. XLIII.

## Of the muſcles common to the four leſſer Toes.

THE muſcles of the toes are either common to all the four leſſer toes, or they are proper and peculiar to the great and little toe, or common to both theſe.

The common to all the four leſſer are fifteen in number, to wit, two Flexors, two Extenſors, four Lumbricales, and ſeven Interoſſei.

### EXTENSOR LONGUS

Origin. ARISES by a narrow, tendinous, and fleſhy beginning from the ſuperior and external part of the head of the Tibia, next the Fibula, and by a fleſhy origin from the upper part of the laſt named bone; dividing into four tendons, and paſſing under the Ligamentum annulare

Inſertion. Is inſerted, together with the following into the upper part of the ſecond bone of each ſmall toe, ſending off on both ſides a ſmall tendon * to the laſt bone of the toes, which unites with its fellow a little before its termination.

Its uſe is to extend all the joints of the four little toes. Uſe.

N. B. Veſalius's ninth muſcle † of the foot ſeems to be very diſtinct from this Extenſor, ariſing from about the middle of the ſpine of the Fibula, to which the membrane that ties it to the Tibia is connected, by a great many fleſhy fibres which run obliquely downward to their tendon, not unlike the Stamina of a feather. It terminates, being often divided in two or three tendons in the upper part of the Os Metatarſi of the little toe.

*This muſcle is not to be found in a dog.*

*In a dog the Extenſor Longus ſprings by a round tendon from the fore part of the external*

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* N. B. Our author, in his Appendix, ſays, " I am now inclined to believe theſe " ſmall tendons proceed from the Interoſſei."

† Peronæus tertius. Albin.
Le petit Peronier. Winſl.

*ternal Apophyſis of the Femur, near the channel of the Patella, and deſcending thro' a Sinus in the head of the Tibia, it grows fleſhy, and then marching down the ſame bone, and paſſing under the ligament that binds it in near its extremity, it ſplits into four tendons, which are inſerted into the upper part of the laſt bone of every toe, near the ſetting on of the claws, firmly adhering to the Oſſa ſeſamoidæa of the joints, as it paſſes over them.*

*N. B. Here, as well as in the fore foot, are obſervable two ſpringy ligaments that keep the laſt bone of every toe in an erect or ſuſpended poſture, for the conveniency of walking, and for ſaving of this muſcle from being always in action. But more of this in my comparative Oſteology.*

### EXTENSOR BREVIS

Origin. ARISES fleſhy and a little tendinous from the fore part of the Os Calcis externally, near its conjunction with the Cuboides, and dilating itſelf into a fleſhy belly, eaſily diviſible into four portions, paſſes over the upper part of the foot under the tendons of the former.

Is inſerted by four tendons into the ſecond bone of the toes. Inſertion.

They ſerve to extend the toes. Uſe.

*In a dog it ſeems to be two diſtinct muſcles, of which one riſes tendinous, the other fleſhy, from the upper and fore part of the Os Calcis, where it joins the Aſtragalus externally. The innermoſt, ſoon growing fleſhy, makes but one tendon, which runs to that toe next the great one; and about the middle of the firſt joint, it loſes itſelf in the tendon of the Longus: the outermoſt gives tendons to the reſt of the toes.*

### PERFORATUS, ſeu FLEXOR SUBLIMIS,

ARISES by a narrow fleſhy beginning from the lower protuberating part of the Os Calcis, between the Abductors of the great and little toe; but deſcending, ſoon dilates into a thick fleſhy belly. Origin.

Is inſerted by four tendons, which ſplit, unite, decuſſate, ſubdivide, and run cloſe, by the edges of the bones, like thoſe of the fingers, into the ſecond Phalanx of the four leſſer or outermoſt toes. Inſertion.

Uſe. Its uſe is to bend the ſecond joint.

*In a dog it ariſeth fleſhy from the back part of the external protuberance or condyle of the Os Femoris, and a little tendinous from the Os ſeſamoidæum, that has a looſe connection with the ſame. Its fleſhy belly lies under the Gaſtrocnæmius, or Extenſor ſuralis, from whoſe external head it can ſcarcely be ſeparated; but as ſoon as it grows tendinous, it climbs along the tendon of that muſcle down to the Os Calcis, which it paſſes over, and then ſplits into four thin tendons, which form a ſort of caſe, with a little hole on its outſide, for the tranſmiſſion of the tendons of the following. About the middle of the firſt Internode the half of this Involucrum is diſcontinued, and the tendon is inſerted broad without any diviſion into the beginning of the ſecond joint.*

*N. B. In the middle of this tendon, as it runs over the end of the Calcaneum, nature has wiſely placed a little hard cartilaginous body, which not only prevents that part of the tendon from being injured by the ſharp extremity of the bone, but alſo ſtrengthens the action of the muſcle itſelf; and ſo, like a*

*Roller or Patella, renders its motion more eaſy and glib in running.*

PERFORANS, ſeu FLEXOR PROFUNDUS,

ARISES by an acute tendon, which ſoon becomes fleſhy from the back part of the Tibia, about two or three inches from its head, above the termination of the Poplitæus; which beginning is continued down the inner edge of this bone by ſhort fleſhy fibres, ending in its large tendon. Its other origination is by a thin and diſgregated tendon from the edge of the Fibula, interſperſed with abundance of carnous Fibrillæ: betwixt this double order of fibres the Tibialis poſticus lies incloſed. Having paſſed under two imbanding ligaments, it marches through the ſinuoſity of the Os Calcis, and about the middle of the ſoal of the foot divides into four tendons, which paſſing thro' the ſlits of the Perforatus are Origin.

Inſerted into the upper part of the laſt bone of all the leſſer toes. Inſertion.

N. B. It

N. B. It parts with a ſmall tendon juſt before its diviſion, which running forwards communicates with that of the Flexor Pollicis longus.

Uſe. Its uſe is to bend the toes.

N. B. The Maſſa carnea, or Muſculoſæ Carnis Portio, Ja. Silv. In the ſole of the foot, may well be reckoned a third head or beginning of this muſcle; for it ariſes by a thin fleſhy origin from moſt part of the ſinuoſity of the Calcaneum, which is continued forward for ſome ſpace on the ſame bone: beſides, it has a thin tendinous beginning from the fore part of the lower protuberance of this Os Calcis, and ſoon becoming all carnous it joins in, ſloping with the tendon of this Flexor, juſt at its diviſion into four tendons. This Moles carnea is wanting in a dog.

*In a dog this muſcle ariſes fleſhy from all the upper half of the Fibula, that ſtands off at a diſtance from the Tibia, filling up moſt of the ſpace between them. It ſplits into five tendons; one runs to the great toe, which in this animal is leſs than any of the four; the*

*the reſt paſs through ſo many caſes, made by the tendons of the Sublimis, to their inſertions at the third bone of each toe.*

N. B. I keep by me the muſcles of a Fœtus prepared, in which I obſerved a ſmall fleſhy muſcle to ariſe from the Os perone, near its extremity between the Flexor Pollicis longus, and the Peronæus brevis: this, in the ſinuoſity of the Calcaneum, grows tendinous, and adhering ſtrictly to the Maſſa carnea in its progreſs forwards, joins in with the tendon of the Perforans that belongs to the toe next the great one.

### LUMBRICALES

They all ariſe from the tendons of the Perforans at ſome diſtance from the union of the Maſſa carnea, with the ſingle tendon of that muſcle; are Origin.

Inſerted by four ſmall tendons into the inſide of the firſt joint of the leſſer toes, next the great toe. Inſertion.

Their uſe is to aſſiſt in bending the toes. Uſe.

## INTEROSSEI

Origin. The ſeven interoſſeous muſcles have the ſame ſituation with thoſe in the hand ; but differ in their origin, inſertion, * and uſe.

Origin. The firſt, or Abductor Indicis Pedis Cowp. ariſes from all the outſide and fore part of the metatarſal bone of the toe next the great one.

Origin. The ſecond, or Adductor ejuſd. fills up all the diſtance between this and the Os Metatarſi of the middle toe, from the ſides of both which it ariſes.

Origin. The third, or Adductor medii Digiti ejuſd. belongs to the ſide of the ſecond leſſer toe next the firſt, and is only conſpicuous internally, ariſing from all the fore part of this metatarſal bone, and by a few fibres from the upper part of the firſt alſo.

The

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* N. B. Our author, in his appendix, ſays, "Upon a ſtricter enquiry I have obſerved "that the Interoſſei Digitorum Pedis do really "all terminate as they do in the fingers."

The fourth, or Abductor medii Digiti ejuſd. which runs along the firſt joint of this toe, on the other ſide, ariſes externally from the metatarſal bone of this, and of that which ſupports the third toe, filling up all the ſpace between them. Origin.

The fifth, or Abductor tertii Digiti ejuſd. ariſes from the upper part of the metatarſal bone, that ſtays the third toe, and alſo from the tendon of the Muſculus Peronæus longus. Origin.

The ſixth, which belongs to the other ſide of this third leſſer toe, ariſes from the ſides of this metatarſal bone; and from that which ſupports the little toe, filling up all the ſpace between theſe on the back ſide of the foot. It has alſo a tendinous adheſion to the long Peronæan muſcle. Origin.

The ſeventh, or Adductor minimi Digiti ejuſdem, ariſes from the upper part, or the Os Metatarſi minimi Digiti, being alſo affixed to the aforeſaid tendon. Origin.

They

Inſertion. They are all inſerted partly into the Oſſa ſeſamoidæa, placed on the articulation of the firſt bone of the toes, with the Oſſa Metatarſi, and partly on the ſide of the ſame bone.

Uſe. Their uſe is to move the four leſſer toes laterally; for when the Interni act, the toes are drawn inwards towards the great toe, and when the Externi act, they are pulled nearer the little one, or are all drawn outwards from the great one.

N. B. All the muſcles that I ſaid ariſe from the tendon of the Muſculus peronæus, ariſe rather from the membrane that covers this tendon, and incloſes it in the Sulcus of the Os cuboides.

*The four ſtraight and two oblique muſcles, ſituate in the hollow of a dog's hind foot, run altogether conform to thoſe already deſcribed in his fore foot.*

# CHAP. XLIV.

## Of the muſcles of the GREAT TOE.

THE Pollex Digitorum Pedis, or great toe, has ſix muſcles.

### EXTENSOR LONGUS *

ARISES by an acute, tendinous, and fleſhy beginning, from near the upper part of the Fibula, and from the membrane that connects it to the Tibia. Origin.

Is inſerted tendinous into the upper part of the laſt bone of the great toe. Inſertion.

Its uſe is to extend that joint by pulling it upwards. Uſe.

### EXTENSOR BREVIS Cowp. †

ARISES tendinous and fleſhy from the fore part of the Os Calcis, near its articulation with the Aſtragalus. Origin.

Is

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* Extenſor proprius Pollicis Pedis. Albin.

† Winſlow and Albinus do not ſeparate this muſcle from the Extenſor brevis communis Digitorum.

Inſertion. Is inſerted tendinous near the upper part of the ſecond bone of the great toe.

Uſe Its uſe is to extend this Internode

*The Pollex Pedis in a dog being armed with a claw much more hooked than any of the other four toes, is joined to one of the bones of the Tarſus near the upper part of the Os Metatarſi, that anſwers the ſore toe; whence the hind foot of this animal does more reſemble the hand of a man than his fore foot does.*

*This part is extended by two muſcles, one proper, which ariſes fleſhy from the Fibula and membrane that connects it into the Tibia: its ſmall belly ſoon turns into a fine tendon, which adhering to that of the Tibialis anticus, runs on to the laſt joint of this toe, where it ends.*

*The other is a tendon caſt off from the Tibialis anticus already deſcribed.*

### FLEXOR LONGUS

Origin. ARISES by a ſharp, tendinous and fleſhy beginning from the upper and back part of the Fibula, being continued down the ſame bone almoſt to its extremity, paſſing its tendon under a ligament at the inner ankle.

Inſertion. Is inſerted into the laſt bone of the great toe, giving a tendon to the Os Calcis in its way.

Uſe. Its uſe is to bend this joint.

### FLEXOR BREVIS

Origin. ARISES tendinous from the Os cuboides and Os Cuneiforme that jets out in the bottom of the foot, it being inſeparably united both with the Adductor and Abductor Pollicis.

Inſertion. Is inſerted into the external Os ſeſamoidæum of the great toe adhering to the Adductor.

Uſe. Its uſe is to bend this ſecond joint.

*In a dog this range of bones is bended by a ſlip caſt off from the Flexor profundus.*

### ADDUCTOR

Origin. ARISES by a long, thin, diſgregated tendon, from the Os Calcis, under the tendinous part of the Maſſa carnea, from the Os Cuboides, from the Os Cuneiforme medium, near the inſertion of the Peronæus primus, and from the upper part of the Os Metatarſi of the ſecond toe: it is ſoon dilated into a pretty large belly.

Inſertion. Is inſerted into the external Os ſeſamoidæum of the great toe.

Uſe. Its uſe is to bring this toe nearer the reſt.

### ABDUCTOR

Origin. ARISES fleſhy from the inſide of the lower protuberance of the Os Calcis laterally, and tendinous from a little tubercle in the ſame bone, near the Os cymbiforme. It only adheres to the other bones on the inſide of the foot, filling up the hollowneſs in the Os Metatarſi Pollicis.

Inſertion. Is inſerted into the internal Os ſeſamoidæum of the firſt bone of the great toe, its tendons being farther continued upon the ſame bone laterally.

Uſe. Its uſe is to pull the great toe from the reſt.

N. B. It

N. B. It has very often a tendinous origin from the edge of the Os cymbiforme, receiving near this bone ſome tendinous filaments from the Tibialis anticus.

*In a dog theſe two laſt deſcribed muſcles are never found.*

## CHAP. XLV.

## Of the muſcles of the little TOE.

THE little toe has two muſcles.

### ABDUCTOR *

ARISES fleſhy and tendinous from the ſemicircular edge of a cavity on the outſide of the inferior protuberance of the Os Calcis; it has another tendinous beginning from the Os cuboides, and a third from the upper part of the Os Metatarſi minimi Digiti. Origin.

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* N. B. Winſlow divides this muſcle into two, viz. Le grand Parathenar, & le Metatarſien.

Inſertion. Is inſerted into the upper part of the firſt bone of the little toe externally laterally.

Uſe. Its uſe is to draw the little toe outwards from that next to it.

### FLEXOR PRIMI INTERNODII MINIMI DIGITI Cowper. *

Origin. ARISES fleſhy from all the outſide of the metatarſal bone that ſuſtains this toe, below its protuberating part; beſides, it has another beginning from the tendon of the Peronæus primus, as it runs in the Sulcus or furrow of the Cuboides.

Inſertion. Is inſerted into the cartilage that is placed upon the articulation of the firſt joint of this toe.

Uſe. Its uſe is to bend this joint.

*In a dog theſe two are wanting.*

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* Flexor brevis minimi Digiti. Albin. Le petit Parathenar. Winſl.

CHAP.

## CHAP. XLVI.

## Of the muſcles common to the great and little TOE.

### TRANSVERSALIS PEDIS Jul. Caſſ. Placent. *

ARISES tendinous from the external Os ſeſamoidæum of the great toe, firmly adhering to the tendinous part of the Adductor Pollicis, ſoon growing fleſhy, it paſſes over the extremity of two of the metacarpal bones, between them and the Flexores Digitorum; and then growing broader, Origin.

Is inſerted partly into a tendon that proceeds from the Expanſio tendinoſa, in the ſole of the foot, and partly into that cartilaginous ligament that covers the articulation of the firſt joint of the third leſſer toe with its Os Metatarſi, ſome of its fleſhy fibres being continued upon the ſame part of the little toe. Inſertion.

Its

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* Le tranſverſal des Orteils. Winſl.

Uſe. Its uſe is to bring the third and fourth leſſer toes nearer the other two and the great one.

*In a dog there is no ſuch muſcle.*

## Of the PRÆPUTIUM and URETHRA in a Dog.

To compleat the Canine Myology, there remain yet to be deſcribed the muſcles of the Præputium and Urethra.

*The Præputium, which in a man has no muſcles, is provided with one pair, and a ſingle one in a dog. The firſt I call*

*Præputium adducens, which proceeds from the Membrana carnoſa, near the Cartilago enſiformis, as it deſcends on each ſide the Linea alba, it grows thicker and narrower, and is inſerted into the Præputium laterally. When this acts, I believe, it ſerves to bring the Præputium over the glans after copulation, (tho' Blaſius affirms, that it draws the Penis forwards, tempore coitûs) being therein much aſſiſted by the contraction of two ligaments which come from about the middle of the Linea alba, and end in the Præputium. The ſecond is*

*Præputium Abducens, or Retrahens, which is a ſingle ſmall muſcle ariſing from the*

*the Sphincter Ani, and firmly adhering to the Accelerator Urinæ, from which it receives two fleſhy ſlips as before noted, runs up along the Urethra, and terminates in the lower part of the Præputium, where its dilated fibres are expanded all over it. Its uſe is to draw back the Præputium, and ſo help to denude or uncover the glans, in order to coition. It may likewiſe ſerve, in ſome meaſure, to dilate and keep open the Urethra at that time, leſt the ſeed ſhould meet with any impediment or lett in this very long paſſage.*

*That part of the Urethra between the Proſtates and the union of the two Corpora cavernoſa, being two or three inches in length, according to the bigneſs of the animal, is ſurrounded by a thin fleſhy muſcle, contrived and placed there on purpoſe for to compreſs the many glands that open within this paſſage, and ſo oblige them to diſcharge their contents, which ſerve as a Vehiculum to forward the deſcending Semen tempore coitûs; to which alſo the contraction of its fleſhy fibres, in narrowing this canal, contributes in a great meaſure, as Mr. Cowper has well obſerved, in boars and in bulls.*

# AN APPENDIX

## Concerning the Muſcles of the CLITORIS and VAGINA in a Woman.

THE Clitoris is furniſhed with two pair of muſcles.

The firſt, * diſcovered by Fallopius,

Origin. ARISES tendinous and fleſhy from the Os Iſchion internally, near its conjunction with the Pubis: in its aſcent it adheres to the inner edge of the laſt named bone, and

Inſertion. Is inſerted fleſhy into the Crus, or beginning of the Clitoris.

This muſcle, with its partner, ſerve for the erection of this part, by detaining the blood in its cavernous ſubſtance.

The ſecond † muſcle belonging to the Clitoris, is by De Graaf very improperly called

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* Erector Clitoridis. Albin.

† Conſtrictor Cunni. Albin.

called Sphincter Vaginæ, ſince it does not ſurround that part with circular fibres, though it it has the ſame effect as if it did.

Origin. It ariſes fleſhy, partly from the Sphincter Ani, and partly from a white hardiſh ſubſtance placed under the ſkin in the Perinæum, between the lower part of the Pudendum and the Anus; from thence it climbs up the ſide of the Vagina, near its outer orifice, covering all the Corpus Vaginæ Vaſculoſpongioſum, which is nothing but a production of the Clitoris, and

Inſertion. Is inſerted into the body or union of the Crura Clitoridis laterally.

Uſe, Its uſe is the ſame with the preceding muſcle; and beſides, by compreſſing the Corpus ſpongioſum, or Plexus retiformis, it ſerves to ſtraiten the orifice of the Vagina, by hindering the blood in its return from thence.

The Vagina Uteri is furniſhed with two pair of muſcles, not mentioned by any author, as far as I know.

The

Origin. The firſt ariſes from the inner edge of the Os Pubis, midway between the Iſchion and the beginning of the Crus Clitoridis; it aſcends a little obliquely, and

Inſertion. Is inſerted into the Vagina.

Uſe. Its uſe is to dilate the ſheath, and open the extremity of the Meatus urinarius; its termination being very nigh the orifice of that paſſage.

Origin. The ſecond ariſes tendinous and fleſhy from the Os Pubis internally, in common with the Levator Ani.

Inſertion. Is inſerted into the upper part of the Vagina, at the ſide of the Meatus urinarius, or Collum Veſicæ.

Uſe This acting pulls up the Vagina, and ſo conſtringes the neck of the bladder after the evacuation of urine.

N. B. Theſe muſcles can never be well raiſed, unleſs the Os Pubis be taken off from the Ilium and Iſchion, with the Inteſtinum rectum, the Vagina and Veſica urinaria left adhering to it.

## A LIST of the MUSCLES found in a Human Body, that are not met with in a Dog.

*PYRAMIDALIS Abdominis*
  *Muſculus Frontalis verus*
  ——— *Naſi proprius, ſeu Rinæus*
*Elevator Labiorum communis*
*Depreſſor* ————————
*Stylo-chondro hyoidæus*
*Coraco-hyoidæus*
*Salpingo-ſtaphilinus*
*Thyreo-ſtaphilinus*
*Subclavius*
*Levator Ani externus*
*Serrator minor anticus*
*Palmaris longus*
——— *brevis*
*One of the Extenſores Carpi Radialis*
*Extenſor tertii Internodii Indicis*
*Adductor Indicis*
*All the muſcles of the Thumb, except one Flexor and one Extenſor*

*All the muſcles of the Little-Finger, except the Extenſor*

*Supinator Longus*

*Coccygæus*

*Tendinoſa Expanſio in Planta Pedis*

*Par nonum Pedis Veſalii*

*Maſſa carnea in Planta Pedis*

*All the muſcles of the Great-Toe, except one Extenſor*

*Abductor minimi Digiti*

*Flexor primi Internodii minimi Digiti*

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## AN
## ETYMOLOGICAL TABLE
## OF THE
# MUSCLES.

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The Muscles take their Names,

### I.

### From their Action or Use.

**A BDUCTOR**, from abducere, to move or draw from.

Accelerator, from accelerare, to haſten or diſpatch.

Adductor, from adducere, to move or bring towards.

Annuens, from annuere, to nod the head forwards, as when we give our aſſent to any thing.

Attollens, from attollere, to liſt or raiſe up.

Capu

Caput concutiens, from concutere, to ſhake.

Conſtrictor, from conſtringere, to ſtraiten or bind faſt.

Cremaſter, or Suſpenſorius, from κρεμάω, ſuſpendo, to ſuſpend.

Depreſſor, from deprimere, to pull or draw down.

Detruſor Urinæ, from detrudere, to thruſt or ſqueeze out.

Diaphragma, from διαφράττω, interſepio, becauſe it divides the cavity of the Thorax from that of the Abdomen.

Dilatator, from dilatare, to enlarge or widen.

Diſtortor Oris, from diſtorquere, to pull or ſet awry.

Extenſor, from extendere, to extend or ſtretch out.

Flexor, from flectere, to bow or bend.

Indicator, from indicare, to ſhew or point, becauſe that Finger is uſed in the Demonſtration of any thing

Levator, from levare, to lift or pull up.

Maſſeter, from μασσάομαι, manduco, comedo, to eat.

Pronator, from pronus, which denotes the poſture of lying with the face downwards; but the word is here taken for turning the palm only downwards.

Renuens, from renuere, to nod the head back, when we deny or refuſe any thing.

Retrahens, from retrahere, to draw back.

Sartorius, from the uſe taylors make of it, to ſit croſs-legg'd.

Sphincter, from σφίγγω, conſtringo, to ſhut.

Supinator, from ſupinus, which denotes that poſture of lying upon the back, with the belly upwards; but in this caſe it is taken for turning the palm only upwards.

Tenſor, vide extenſor.

## II.

## From their Beginning, or Origin.

Graphoides, or Styliformis, from γραφις, ſtylus, becauſe of its ſuppoſed origination from the proceſs of the temple-bone, ſo called. The Muſculus digaſtricus was thus named by the ancients.

Pectinæus, vel Pectinalis, from Pecten, i. e. Os Pubis.

Pterigoidæus, or Aliformis, from πτέρυξ, υγὸς, ala, and εἶδὸς, forma.

Sacer, from the Os ſacrum.

Sacro-lumbalis, from the laſt named bone, and from the tranſverſe proceſſes of the loins.

Semifibulæus, from one half the Fibula.

Tranſverſalis, from the tranſverſe proceſſes of the back and neck.

Zygomaticus, from the bone called Ζύγωμα, which is derived from ζύγὸς, vel ζεύγὸς, Jugum, a yoke ; Os jugale, the yoke-bone.

## III.

## From their Colour.

Lividus, i. e. Pectinæus, from its black and blueiſh colour.

## IV.

## From their Compoſition and Variety of Parts.

Biceps, from its having bina capita, two heads or beginnings.

Bicornis, from its having two origins, like ſo many horns.

Complexus, from its being made up of many tendinous and fleſhy fibres, intricately mixed one with another.

Complicatus is another name for the ſame muſcle, having the ſame etymology.

Digaſtricus, or Biventer, from δίς & γαστήρ, becauſe it has two fleſhy bellies, with a tendon intervening.

Gemellus, from its having a double origin.

Gemini, from their being two diſtinct muſcles, united only by a membrane.

Quadriceps, from its ariſing by four heads.

Triceps, from its ariſing by three heads.

## V.

## From the Courſe and Direction of their Fibres.

Obliquus.
Orbicularis.
Rectus.
Tranſverſalis.

## VI.

## From their Figure or Shape.

Cucullaris, from the reſemblance the lower part of this pair of muſcles has to that part of a monk's hood that lies between his ſhoulders.

Deltoides, or Deltiformis, from δέλτα, the fourth Greek letter, and εἶδος, forma.

Faſcialis, i. e. Sartorius, from its croſſing ſome of the muſcles of the thigh and leg, like a ſwath-band or Faſcia.

Faſcia lata, from its incloſing moſt of the muſcles that lie on the Os Femoris.

Lumbricalis, from the likeneſs of their ſhape to the common earth-worm.

Marſupialis, becauſe the Gemini, by ſome reckoned a part of this muſcle, do form a Marſupium, or fleſhy purſe by their membranous connexion, through which its tendons paſs.

Pyramidalis, becauſe it ariſes by a broad baſis, and terminates by a narrow point like a pyramid, or pyramidal figure, which is broad beneath, and ſharp or narrow above.

Pyriformis, from the faint reſemblance it bears to a pear.

Quadratus, from its ſquare or quadrilateral figure.

Rhomboides, from ῥόμβὸς, a diamond figure, and εἶδος, forma, i. e. a diamond-like figure whoſe oppoſite ſides and oppoſite angles are equal.

Rotundus, from its being round and ſpherical.

Scalenus, from the figure of a triangle, whoſe three ſides are all unequal, called in Greek σκαληνὸς.

Serratus, from its being divided at its termination into ſeveral diſtinct fleſhy portions, which are not unfitly compared to the teeth of a ſaw, called Serra in Latin.

Solæus, or Soleus, from ſolea, a ſole-fiſh.

Splenius from Splenium, a ferula, or rouled ſplint, which ſurgeons are wont to apply to the ſides of a broken bone.

Teres, from it being long and round.

Trapezius, from τράπεζα, which denotes in Geometry a kind of quadilateral figure; but properly it ſignifies menſa, a table. Hence ſome call this the table muſcle.

Triangularis, from triangulum, which is a figure with three corners.

## VII.

## From their Inſertion, or Termination.

Ciliaris, from Cilia, or the ſoft cartilaginous edges of the eye-lids, into which the Tharſi, or hairs, are fixed.

Maſtoidæus, or Maſtoides, i. e. Mammiformis, from μάστὸς, uber, mamma & εἶδὸς, forma.

Semiſpinalis, from half of the ſpinal proceſſes of the back.

Spinalis, from ſeveral of the ſpines of the neck.

## VIII.

### From their Origin and Inſertion.

Baſio-gloſſus, from βάσις, the fore-bone of the Os Hyoides, and γλῶσσα, lingua, the tongue.

Cerato-gloſſus, from κέρας, ατὸς, cornu & γλῶσσα.

Coraco-Brachialis, from the Proceſſus, called κορακοειδὴς, from κόραξ, κὸς, corvus & εἶδὸς, forma and Brachium.

Coraco-Hyoidæus, from the laſt named proceſs and the Os Hyoides.

Crico-Arytænoidæus, from κρίκὸς, annulus, and ἀρύταινα, guttus, ſ. gutturnium, an ewer or cruet.

Crico-Thyreoidæus, as above, and from θυρεοειδὴς, i. e. ſcutiformis.

Genio-gloſſus, from γένειον, mentum, the chin.

Genio-Hyoidæus, as above, and from Os Hyoides.

Gloſſo-Staphilinus, from γλῶσσα, lingua, and ςαφυλὴ, uva, uvula, gargareon.

Hyo-thyreoidæus, from the Os Hyoides, and θυρεοειδὴς, ſcutiformis.

Mylo-hyoidæus, from μύλοι, dentes molares.

Occipito-frontalis, from the Occiput and ſkin of the Os Frontis.

Palato-ſtaphilinus, from the Os Palati and ςαφυλὴ, uvula.

Salpingo-ſtaphilinus, from σάλπιγξ, ιγγος, Tuba.

Sterno-hyoidæus, from the Os Sterni or Pectoris.

Sterno-thyreoidæus, as above.

Stylo-chondro hyoidæus, from ςύλὸς, Stylus, i. e. Proceſſus ſtiliformis, from χόνδρὸς, cartilago, &c.

Stylo-gloſſus, from ςύλὸς & γλῶσσα.

Stylo-hyoidæus, as above.

Thyreo-artynedoiæus, from θυριεὸς, ſcutum.

Thyreo-ſtaphilinus, as above.

'Tis worth obſerving that the firſt word denotes always the origin, and the laſt the inſertion of the muſcle.

Trachelo-maſtoidæus, from τράχηλὸς, collum, cervix; its chief origin being from the Vertebræ of that part.

## IX.

## From the parts they belong to.

Coccygæus, from κόκκυξ, cucullus, i. e. Os Coccygæus, a bone ſo called from its ſhape.

Oeſophagus, from οἰσοφάγὸς, œſophagus, gula, the gullet.

Pharyngæus, from φάρυγξ, guttur, fauces.

Cephalo-pharyngæus, from κεφαλὴ, caput.

Chondro-pharyngæus, from χόνδρὸς, cartilago.

Crico-pharyngæus, from κρίκὸς, annulus.

Gloſſo-pharyngæus, from γλῶσσα, lingua.

Hyo-cerato-pharyngæus, as above.

Mylo-pharyngæus. from μύλοι, dentes molares.

Pterigo-pharyngæus, from πτέρυξ, ala.

Salpingo-pharyngæus, from σάλπιγξ.

Stylo-pharyngæus, as above.

Syndeſmo-pharyngæus, from συνδεσμὸς, vinculum, ligamentum.

Thyreo-pharyngæus, from θυρεὸς, ſcutum.

Rinæus, from ῥὶν, ῥινός, naſus.

Stapidæus, from ſtapes.

## X.

## From the Parts they conſtitute or compoſe.

Buccinator, becauſe it makes up the greateſt part of the cheek, called Bucca.

Gaſtrocnemius, from γαστροκνημία, ſura, the calf of the leg, which comes from γαστὴρ, venter, & κνημὴ, tibia.

Gluteus, from γλουτὸς, nates.

N. B. The

N. B. The Pharyngæus, with all its various orders of fibres, might have been deſcribed under this head as well as in the former.

Suralis, from ſura, the calf of the leg.

Θέναρ, ſeu Thenar; thus the Greeks call the riſing and prominent fleſhy part in the palm of the hand, which word ſeems to come from ϑείνειν, percutere, vertebrare.

## XI.

## From their paſſing through ſome Part.

Perforans, becauſe its tendon paſſes through a ſlit or fiſſure in that of the Perforatus.

Trochlearis, from paſſing its tendon through a cartilage called Trochlea, a pulley.

## XII.

## From their Quantity or Magnitude, with reſpect to one another.

**Brevis.**

Gracilis, from its being the thinneſt and ſlendereſt muſcle of the Tibia.

Latiſſimus, from its being the broadeſt and largeſt muſcle that lies on the back or neck.

Longiſſimus, from its being the longeſt of thoſe of the back.

Longus.
Magnus.
Major.
Maximus.
Medius.
Minimus.
Minor.
Parvus.

Theſe need no explication.

Platyſma-myoides, i. e. Expanſio vel Dilatatio muſcularis, from ϖλάτυσμα, latum linteum, vel aliquid ſimile ; or from ϖλατυσμὸς, Dilatatio, and μῦς, muſculus, & εἶδὸς, forma.

Vaſtus, becauſe it and its fellow are the two biggeſt and thickeſt muſcles belonging to the leg, or Tibia.

## XIII.

## From their Situation or Poſition.

Angonæus, vel Anconæus, from ἀγκῶν, cubitus, but, in a ſtrict ſenſe, is taken for the proceſs of the cubit, called the elbow.

Anticus, that which lies in the fore part.

Antithenar, from its ſituation, which is oppoſite to the Thenar, or from its uſe, which is contrary to it.

Brachiæus, from βϱαχιών, brachium.

Cruræus, from Crus, i. e. Femur.

Cubitalis, } from cubitus, i. e. ulna.
Cubitæus,

Externus.

Fibulæus, from fibula.

Hypothenar, becauſe it is ſituate below the Thenar.

Iliacus, from the Os Ilium.

Immerſus, from its being ſunk as it were under the reſt of the muſcles of the Scapula.

Infra-ſpinatus, below the Spina Scapulæ.

Intercoſtales, from their being placed inter Coſtas, or between the ribs.

Internus.

Interoſſeus, between the metacarpal and metatarſal bones of the hand and foot.

Inter-ſpinales, between the ſpines of the neck.

Inter-tranſverſales, between the tranſverſe proceſſes of the neck or loins.

Inter-vertebrales, from their being placed upon and between the bodies of ſome of the Vertebræ of the neck.

Palmaris, from the ſpreading of its tendon upon the palm of the hand.

Plantaris, from the ſuppoſed ſpreading of its tendon upon the ſole of the foot, under the ſkin.

Pectoralis, from the Os Pectoris.

Peronæus, from the Perone, ϖεϱόνη, in Greek, the ſmalleſt bone in the leg.

Poplitæus, from Poples, the ham.

Poſticus, that is, ſituate behind, or on the back ſide.

Pſoas, from ψόα, lumbus, the loins.

Radialis, }
Radiæus, } from Radius.

Subclavius, from Clavicula, under which it is placed.

Subſcapularis, under the Scapula.

Supra-ſpinatus, above the ſpine of the Scapula.

Temporalis, from tempora, the temples.

Tibialis, }
Tibiæus, } from Tibia.

Ulnaris, from Ulna.

## XIV.

## From their Subſtance.

Membranoſus, becauſe of its broad membrane-like tendon.

Semi-membranoſus, from its being half membranous

Semi-nervoſus, }
Semi-tendinoſus, } from its being half tendinous.

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# An Account of what Dr. DOUGLAS obliges himſelf to perform in a COURSE of HUMAN and COMPARATIVE ANATOMY.

## In the OSTEOLOGICAL PART:

1. TO diſcourſe on the bones, cartilages, and ligaments in general.

2. To examine the bones in particular, all of them being ſo prepared as their inner ſubſtance may be viewed as well as their outer.

3. To ſhew the articulation of the bones both in a ſkeleton and in a freſh ſubject.

4. To demonſtrate the Perioſteum, the Medulla, the entrance and exit of the blood veſſels, with all the mucilaginous glands, ſeated in or near the joints.

5. To compare the bones of a Fœtus with thoſe of an adult, and to give an account of their accretion from conception to the birth.

6. To adjuſt the difference between a male and female ſkeleton.

7. To ſhew and deſcribe all the cartilages and ligaments.

### In the MYOLOGICAL PART:

1. To give the ſtructure of a fibre, membrane and muſcle in general.

2. To raiſe every muſcle in particular; ſhewing its origin, progreſs and inſertion; giving an account of its firſt diſcoverer, and to whom we are obliged for its beſt deſcription.

### In the ENTEROLOGICAL PART:

1. To give the diviſion of the body, with a deſcription of its common containing parts, as the Cuticula, Cutis, &c.

2. To ſhew all the Viſcera contained in the cavity of the Thorax and Abdomen in Situ naturali, obſerving their ſituations and mutual connexions one with another, and from thence explaining ſeveral Phœnomena, that happen in the practice of phyſic and ſurgery.

3. To demonſtrate each Viſcus in particular.

4. To ſhew the parts ſubſervient to generation in both ſexes, in freſh bodies, and dried preparations.

5. To ſhew the organs of ſenſe in freſh and dried preparations.

6. To demonſtrate all the parts of a human Fœtus that differ from an adult, as the Thymus,

Glandulæ renales, (their numerous veſſels being all filled with different coloured wax) the Funiculus and Vaſa Umbilicalia, the Foramen Ovale, Canalis Botalli vel Ductus arterioſus, Ductus venoſus, &c.

7. To examine the Placenta uterina, with the membranes that involve the Fœtus in Utero.

### In the NEUROLOGICAL PART:

1. To diſcourſe of the nerves in general.

2. To trace all the nerves that riſe from the Medulla oblongata through the holes in the Cranium to their reſpective terminations in the noſe, eyes, ears, tongue, ſkin of the head, and face, neck, and parts contained in the cheſt and lower belly; and thoſe that ſpring from the Medulla ſpinalis into the extremities, where they chiefly end.

### In the ADENOLOGICAL PART:

1. To explain the ſtructure of the glands in general.

2. To demonſtrate the brain and ſpinal marrow, with all the membranes that involve them.

3. To examine the ſalivary, the mammary, and all the other conglomerate glands, injecting the excretory ducts of ſome of them with mercury and wax.

4. To demonſtrate ſeveral of the lymphatic or conglobate kind.

In the ANGEIOLOGICAL PART:

1. To diſcourſe of the arteries, veins, and lymphatic veſſels in general, demonſtrating their ſeveral coats and valves.

2. To fill all the arteries with a ceraceous matter.

3. To inject the Sinus's of the Dura Mater, and fill ſome of the veins with a different coloured wax, and to trace the reſt of them, particularly the Azygos, the ramifications of the Porta, and thoſe that are opened in Venæſection.

N. B. The above mentioned parts are all to be exhibited in human bodies, moſt of them being likewiſe ſhewn in dried preparations, and in deſcribing them the following particulars are to be conſidered and explained, viz. their names in Greek, Latin and Engliſh, etymology, diſcoverer, number, ſituation, connexion, figure, ſubſtance, cavities, magnitude, membranes, or coats, veſſels, colour, &c. with their moſt probable uſe. There will be added in the demonſtration of the Viſcera and Glands, ſome obſervations from diſſecting morbid bodies, how they may be preternaturally affected, with an explication of the ſymptoms that proceed from thence.

In the COMPARATIVE PART of this Courſe:

1. To demonſtrate and compare all the parts of a quadruped at the ſame time with thoſe of a human body, that their different ſtructures may be better obſerved.

2. To ſhew the Vaſa Lactea, the glands of the Meſentary, Receptaculum Chyli, Ductus Thoracicus, and its opening into the ſubclavian vein.

3. To demonſtrate the four ſtomachs of ſome animal that chews the cud, and to give an account of the cauſe and uſe of rumination.

4. To ſhew the periſtaltic motion of the guts, and the action of the Diaphragm in a rabbit.

5. To demonſtrate the Uterus of a Cow, with its Cotyledones, and the liquors and membranes of the Fœtus included.

6. To raiſe all the muſcles in a Volatile, inject its arteries, and trace its nerves, to examine the internal and external ſtructure of its ear, to demonſtrate the Membrana nictitans, and ſhew the contrivance that hinders the tendon of its muſcle from compreſſing the globe of the eye while it acts, with the ſtructure of the other parts of the eye. To examine the two ſtomachs,

viz. the Ingluvies and Ventriculus, or gizzard, with the Prolobus or Veſtibulum, the heart and lungs, with the perforations or openings of the laſt mentioned into ſeveral pellucid membranous bladders that lie between the folds of the inteſtines.

7. In a cock, to demonſtrate the Teſtes, kidneys, ureters, the two Penis's, and Cloaca.

8. In a hen, to ſhew the Ovarium, with the Racemi Vitellorum, the Oviductus and Uterus.

9. To ſhew the circulation of the blood. and the animalcula in Semine maſculino with glaſſes.

10. To give the anatomical deſcription of all the parts of an oyſter, ſkait, lobſter, and whiting: the ſtructure of the heart, and the elegant contrivance of the gills, will be demonſtrated in this laſt named fiſh, with an account of the motion of the blood in thoſe animals that have but one ventricle in their heart.

11. To exhibit the ſtructure of that moſt abſtruſe organ of hearing in ſeven or eight different animals.

After a faithful and compleat demonſtration of the above mentioned particulars, to conclude the courſe, I will give a ſhort hiſtory of the OECONOMIA ANIMALIS, drawn from the ſtructure of the parts thus deſcribed, and comprehended under the following heads, viz. Of maſtication, deglutition, digeſtion, chylification, ſanguification, the circular motion of the blood in a Fætus, and in an adult, of nutrition, ſecretions of all the particular humours in the body from the Maſſa ſanguinea, of generation, reſpiration, muſcular and progreſſive motion, with an account how the ſenſes are performed, &c.

From the Blue Boar, over againſt the end of Fetter-lane, in Fleet-ſtreet, September 24, 1706.

# The ORDER of DISSECTING the MUSCLES, from the twelfth chapter of ALBINUS's firſt book, De hiſtoria muſculorum.

—HOC tamen addendum eſſe putamus, quod ſi quis omnes in uno eodemque corpore perſequi velit, ſic ut neque uni ulli multum detrimenti inferre neceſſe ſit, neque corruptio corporis impediat, ab Abdomine incipiendum, & dein eo regionum, in quibus muſ-

culi ſiti, & quas proximus liber definiet, ordine progrediendum, quo eas nunc recenſebimus: quæ circa Funem ſpermaticum & Teſtem, media inter Thoracem Abdomenque, Lumborum & Coxarum pars prior, Pectus, Dorſum cum Lumborum poſteriori parte & Cervice, Thoracis latus, Spatia intercoſtalia, quæ ſub Pectore, Collum, Calva, circa Auriculam, Facies, Mala cum latere Calvæ, quæ ſub Mala, Colli ſceleti latus parſque prior, Natis, Femur, quæ circa Perinæum viri, vel Genitalis muliebris ambitus, quæ circum Anum, Scapula cum parte Humeri ſuperiore, Humerus, Oculi Cavum, Cubitus, Manus, Crus, dorſum Pedis extremi Digitorumque Pedis, Planta & Digitorum pedis pars inferior, Auricula, Auris interna. In unaquaque autem regione ipſi muſculi eo ordine quærendi, quo ſitos eos eſſe, eodem proximo libro docebimus. Hanc potiſſimum, aut certe non multum ab ea diverſam viam, ni quid forte intercedat, tenendam eſſe, uſu, tractandoque cognovimus.

A LIST

# A LIST of MUSCLES, according to their Situation, in the different regions of the body, from the third chapter of ALBINUS's ſecond book.

MUSCULI in his regionibus, in Calva Epicranius.

CIRCA AURICULAM, Attollens auriculæ, Anterior ejuſdem, Retrahentes tres, ſuperior, medius, inferior.

IN FACIE, Orbiculares Palpebrarum, Corrugatores ſuperciliorum, Compreſſores narium, Levatores labii ſuperioris alarumque naſi, Levatores labii ſuperioris, Zygomatici minores, Levatores angulorum oris, Zygomatici majores, Depreſſores angulorum oris, Depreſſores labii inferioris, Naſales labii ſuperioris, Buccinatores, Orbiculares oris, Depreſſores alarum naſi, Levatores menti.

IN MALA ET LATERE CALVÆ, Maſſeter, Temporalis.

IN CAVO OCULI, Levator palpebræ ſuperioris, Obliquus ſuperior oculi, Rectus attollens oculi, Rectus abductor oculi, Rectus adductor oculi, Rectus depreſſor oculi, Obliquus inferior.

In Auricula, Tragicus, Antitragicus, Major helicis, Minor helicis, Tranſverſus Auriculæ.

In Aure interna, Externus mallei, Laxator tympani, Tenſor tympani, Stapedius.

In Collo, Latiſſimi colli, Sterno-maſtoidei, Cleido-maſtoidei, Coraco-hyoidei, Sterno-hyoidei, Sterno-thyreoidei, Hyo-thyreoidei, Biventres maxillæ, Stylo-hyoidei, Stylo-hyoidei alteri, Stylo-gloſſi, Stylo-pharyngei, Mylo-hyoidei, Genio-hyoidei, Cerato-gloſſi, Baſio-gloſſi, Chondro-gloſſi, Genio-gloſſi, Linguales, Conſtrictores pharyngis inferiores, Conſtrictores pharyngis medii, Conſtrictores pharyngis ſuperiores, Salpingo-pharyngei, Palato-pharyngei, Conſtrictores iſthmi faucium, Levatores palati mollis, Circumflexi palati, Azygus Uvulæ, Crico-thyreoidei, Crico-arytænoidei poſtici, Arytænoidei obliqui, Arytænoideus tranſverſus, Crico-arytænoidei laterales, Thyreo-arytænoidei.

Sub Mala, Pterigoideus internus, Pterigoideus externus.

In Pectore, Pectorales, Serrati antici, Subclavii.

In latere Thoracis, Serratus magnus.

In Abdomine, Obliqui externi abdominis, Obliqui interni abdominis, Tranſverſi abdominis, Recti abdominis, Pyramidales.

Circa Funem spermaticum ac Testem, Cremaſter.

INTER ABDOMEN THORACEMQUE, Diaphragma.

SUB PECTORE, Triangularis ſterni.

IN LUMBORUM ET COXARUM PARTE PRIORE, Pſoæ parvi, Pſoæ magni, Iliaci interni, Quadrati lumborum.

CIRCA PERINÆUM VIRI, Acceleratores, Erectores penis.

IN GENITALIS MULIEBRIS AMBITU, Conſtrictores cunni, Erectores clitoridis.

CIRCUM ANUM, Sphincter ani externus, Tranſverſi perinæi, Tranſverſi perinæi alteri, Levatores ani, Coccygei, Curvatores coccygis, Sphincter ani internus. In VIRO etiam Compreſſores proſtatæ.

IN DORSO CUM LUMBORUM POSTERIORE PARTE ET CERVICE, Cucullares, Latiſſimi dorſi, Rhomboidei majores, Rhomboidei minores, Serrati poſtici ſuperiores, Serrati poſtici inferiores, Levatores ſcapularum, Splenii capitis, Splenii colli, Biventres cervicis, Complexi, Trachelo-maſtoidei, Tranſverſales cervicis, Cervicales deſcendentes, Sacro-lumbales cum Longiſſimis dorſi, Spinales dorſi, Semi-ſpinales dorſi, Spinales cervicis, Interſpinales cervicis, Recti poſtici majores capitis, Recti poſtici minores capitis, Obliqui inferiores capitis, Obliqui ſuperiores capitis, Multifidi ſpinæ, Interſpinales

Lumborum, Interſpinales dorſi, Intertranſverſarii lumborum, Intertranſverſarii dorſi, Levatores coſtarum breviores, Levatores coſtarum longiores.

IN SPATIIS INTERCOSTALIBUS, Intercoſtales externi, Intercoſtales interni.

IN COLLI SCELETI LATERIBUS PARTEQUE PRIORE, Scaleni priores, Scaleni minimi, Scaleni laterales, Scaleni medii, Scaleni poſtici, Recti interni majores capitis, Longi colli, Recti interni minores capitis, Recti laterales capitis, Intertranſverſarii colli priores, Intertranſverſarii colli poſteriores.

IN SCAPULA ET HUMERI SUPERIORI PARTE. Deltoides, Supra-ſpinatus, Infra-ſpinatus, Teres minor, Teres major, Sub-ſcapularis.

IN HUMERO, Biceps brachii, Coraco-brachialis, Brachialis internus, Triceps brachii.

IN CUBITO, Supinator longus, Radialis externus longior, Radialis externus brevior, Extenſor communis digitorum manus, Extenſor proprius digiti minimi manus, Ulnaris externus, Anconeus, Supinator brevis, Abductor longus pollicis manus, Extenſor minor pollicis manus, Extenſor major pollicis manus, Indicator, Ulnaris internus, Palmaris longus, Radialis internus, Pronator teres, Sublimis, Profundus, Flexor longus pollicis manus, Pronator quadratus.

IN MANU, Lumbricales, Abductor brevis pollicis manus, Opponens pollicis manus, Flexor brevis pollicis manus, Adductor pollicis manus, Palmaris brevis, Abductor digiti minimi manus, Flexor parvus digiti minimi manus, Adductor metacarpi digiti minimi, Interoſſei manus, Abductor indicis.

In Nate, Gluteus magnus, Gluteus medius, Gluteus minor, Pyriformis, Geminorum ſuperior, Geminorum inferior, Obturator internus, Quadratus Femoris.

In Femore, Biceps cruris, Semi-tendinoſus, Semi-membranoſus, Tenſor vaginæ femoris, Rectus cruris, Sartorius, Vaſtus externus, Vaſtus internus, Cruralis, Pectineus, Adductor longus femoris, Gracilis, Adductor brevis femoris, Obturator externus, Adductor magnus femoris.

In Crure, Gemellus, Plantaris, Soleus, Popliteus, Flexor longus digitorum pedis, Flexor longus pollicis pedis, Tibialis poſticus, Peroneus longus, Peroneus brevis, Extenſor longus digitorum pedis, Peroneus tertius, Tibialis anticus, Extenſor proprius pollicis pedis.

In pedis extremi digitorumque ejus dorso, Extenſor brevis digitorum pedis.

In Planta et digitorum pedis parte inferiore, Flexor brevis digitorum pedis, Abductor pollicis pedis, Abductor minimi pedis, Lumbricales pedis, Flexor brevis pollicis, pedis, Adductor pollicis pedis, Tranſverſus pedis, Flexor brevis minimi pedis, Interoſſei pedis.

FINIS.

# AN
# ACCOUNT
# OF THE
# BLOOD VESSELS
# AND
# NERVES.

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# OF THE BLOOD VESSELS.

THE veſſels which carry the blood from the heart to the extremities of the body, are called Arteries, and thoſe which return it to the heart, Veins.

The arteries have three coats; a middle muſcular, and an external and internal membranous. The veins are ſaid to have the ſame; but they are much thinner than thoſe of the arteries, and are not eaſily ſeparated.

In the inſide of the veins, eſpecially in the lower limbs, there are many valves. Theſe valves not only prevent the reflux of the venal blood, which otherwiſe would have happened from the frequent action of the muſcles on the outſides of the veins, but, by this ſingular contrivance, the blood is actually propelled, or its motion accelerated, by the action of theſe muſcles.

Both the arteries and veins as they run on the inſide of the limbs, or are diſperſed in parts that ſuffer great extenſions, as the ſtomach, guts and uterus, are curved ſo much, that when the parts come to be diſtended they may comply with thoſe diſtenſions, by only being ſtraightened, and ſo are preſerved from being ſtretched, which would leſſen their diameters.

The ſmall arteries near the heart go off from the large trunks at obtuſe angles, farther at leſs obtuſe angles, then at right angles, farther ſtill at acute angles, and near the extremities at very acute angles; by which means the blood in theſe veſſels has the advantage of a more direct courſe, the farther it moves from the heart.

The ſmall arteries always divide in ſuch a manner that the leſſer branches may lie leaſt in the direction of the blood flowing into them, which makes the blood flow moſt freely into that branch that hath fartheſt to carry it; and the ſmaller branches ariſe more or leſs obliquely from the ſides of other arteries, according to the proportion they bear to the arteries ſrom which they ariſe; becauſe an artery comparatively large ariſing obliquely from the ſide of another, would make an orifice in that it ariſes from too large, and weaken it. Both theſe ends are at once anſwered, by making the arteries that give off the branches bend more or leſs toward the branches they give off, according to the comparative magnitude of the branches given off.

The extreme branches both of the arteries and veins have very numerous communications, like thoſe in the ſtamina of the leaves of plants, by which communications the blood that is obſtructed in any veſſels may paſs off by other veſſels that are not obſtructed. It is by means of theſe communications that the blood circulates in a limb, part of which has been amputated, and into any veſſels that have been ſeparated from the trunks that ſupplied them, which otherwiſe muſt have mortified for want of nouriſhment, and with them all the branches that ariſe from ſuch ſeparated veſſels. To theſe communications likewiſe it is owing, that the fluids contained in a large inflammation ſuppurate into one cavity.

## Of the ARTERIES.

The heart throws the blood into two great arteries; one of which is named Aorta, the other, Arteria Pulmonalis.

The Aorta diſtributes the blood to all the parts of the body, for the nouriſhment of the parts, and for the ſecretion of different fluids.

The Arteria Pulmonalis carries the blood through all the capillary veſſels of the lungs.

Both theſe great or general arteries are ſubdivided into ſeveral branches, and theſe again into a great number of leſſer ramifications.

## Of the PULMONARY ARTERY.

The Pulmonary Artery goes out from the right ventricle of the heart; and its trunk having run almoſt directly upward as high as the curvature of the Aorta is divided into two lateral branches, one going to the right hand, called the right Pulmonary artery; the other to the left, termed the left Pulmonary artery. The right artery paſſes under the curvature of the Aorta, and is conſequently longer than the left. They both run to the lungs, and are diſperſed through their whole ſubſtance by ramifications nearly like thoſe of the Bronchia, and lying in the ſame directions.

## Of the AORTA in general.

The baſis of the heart being very much inclined to the right ſide, and turned a little backward, the Aorta goes out from it in a direct courſe, nearly over againſt the fourth vertebra of the back. Its courſe is direct with reſpect to the heart; but with reſpect to all the reſt of the body, it aſcends obliquely from the left to the right hand, and from before, backward.

Soon after this it bends obliquely from the right hand to the left, and from before, backwards, reaching as high as the ſecond vertebra of the back; from whence it runs down again in the ſame direction, forming an oblique arch. The middle of this arch is almoſt oppoſite to the right ſide or edge of the ſuperior portion of the ſternum, between the cartilaginous extremities or ſternal articulations of the firſt two ribs.

From thence the Aorta deſcends in a direct courſe along the anterior part of the vertebræ, all the way to the Os Sacrum, lying a little toward the left hand, and there it terminates in two ſubordinate or collateral trunks, called Arteriæ Iliacæ.

## General diviſion of the AORTA.

The Aorta is by anatomiſts, generally divided into the Aorta aſcendens and Aorta deſcendens, tho' both are but one and the ſame trunk. It is termed Aſcendens, from where it leaves the heart to the extremity of the great curvature or arch. The remaining part of this trunk from the arch to the Os Sacrum, or Bifurcation already mentioned, is named Deſcendens.

The Aorta deſcendens is further divided into the ſuperior and inferior portions; the firſt taking in all that lies above the diaphragm; the other, all that lies between the diaphragm and the bifurcation.

The Aorta aſcendens is chiefly diſtributed to part of the Thorax, and to the head and upper extremities. The ſuperior portion of the Aorta deſcendens furniſhes the reſt of the Thorax; the inferior portion furniſhes the abdomen and lower extremities.

The great trunk of the Aorta, through its whole length, ſends off immediately ſeveral branches which are afterwards differently ramified; and theſe arterial branches may be looked upon as ſo many trunks with reſpect to the other ramifications; which again may be conſidered as ſmall trunks with regard to the ramifications that they ſend off.

The branches which go out immediately from the Trunk of the Aorta, may be termed original or capital branches; and of theſe, ſome are large, and others very ſmall.

The large capital branches of the Aorta are theſe; two Arteriæ Subclaviæ: two Carotides, one Cæliaca, one Meſenterica ſuperior, two Renales, formerly termed Emulgentes, one Meſenterica inferior, and two Iliacæ.

The ſmall capital branches are chiefly the Arteriæ Coronariæ cordis, Bronchiales, Oeſophagææ, Intercoſtales, Diaphragmaticæ inferiores, Spermaticæ, Lumbares and ſacræ.

Theſe capital branches or arteries are for the moſt part diſpoſed in pairs, there being none in odd numbers but the Cæliaca, the two Meſentericæ, ſome of the Oeſophagææ, the Bronchiales, and ſometimes the Sacræ.

The ramifications of each capital branch are in uneven numbers with reſpect to their particular trunks; but with reſpect to the ramifications of the like capital trunks on the other ſide, they are diſpoſed in pairs. Among the branches there are in odd numbers none but the Arteria Sacra when it is ſingle, and the Oeſophagææ, the ramifications of which are ſometimes found in pairs.

Before we enter upon the detail of each of theſe particular arteries, many of which have proper names; it will be convenient to give a ſhort view of the diſpoſition and diſtribution of the principal arterial branches, as a general plan to which all the particularities of each diſtribution may afterwards be referred: for it is found by experience, that the common method of deſcribing the courſe of all the ramifications of theſe veſſels, without having firſt given a general idea of the principal branches, is very troubleſome to beginners.

## General Diſtribution of the Branches of the AORTA.

The Aorta gives riſe to two ſmall Arteries, called Coronariæ Cordis, which go to the heart and its auricles; one of which is ſituated anteriorly, the other poſteriorly, and ſometimes they are three in number.

From the upper part of the arch or curvature, the Aorta ſends out commonly three, ſometimes four large capital branches, their origins being very near each other. When there are four, the two middle branches are termed Arteriæ Carotides; the other two, Subclaviæ; and both are diſtinguiſhed into right and left.

When there are but three branches, which is ofteneſt the caſe, the firſt is a ſhort trunk, common to the right Subclavian, and Carotid; the ſecond is the left Subclavian, and the third the left Carotid. Sometimes, though very rarely, theſe four arteries unite in two trunks.

The origin of the left Subclavian terminates the Aorta aſcendens; but ſometimes there are four branches, the firſt three of which are thoſe already mentioned, and the fourth a diſtinct trunk of the left vertebral artery.

It muſt be obſerved, that theſe large Branches which ariſe from the curvature of the Aorta, are ſituated obliquely; the firſt, or that which is moſt on the right hand, lying more forward than the reſt, and the laſt, which is moſt on the left hand, more backward. The firſt and ſecond or middle branches, are generally in the middle of the arch, and the third lower down. Sometimes the firſt alone is in the middle; all which varieties depend on the obliquity of the arch.

The Carotid Arteries run up directly to the head, each of them being firſt divided into two, one external the other internal. The external Artery goes chiefly to the outer parts of the head and dura mater or firſt covering of the brain. The internal enters the Cranium, through the bony canal of the Os Petroſum; and is diſtributed through the brain by a great number of ramifications.

The Subclavian Arteries ſeparate laterally and almoſt tranſverſely, each toward that ſide on which it lies, behind and under the Claviculæ, from whence they have their name.— The left ſeems to be ſhorter and runs more obliquely than the right.

The Subclavian on each ſide terminates at the upper edge of the firſt Rib, between the lower inſertions of the firſt Scanus Muſcle; and there, as it goes out of the Thorax, takes the name of Arteria Axillaris.

During this courſe of the Subclavian Artery, taking in the common trunk of the right Subclavian, ſeveral Arteries ariſe from it, *viz.* the Mammaria Interna, Mediaſtina, Pericardia, Diaphragmatica minor ſive ſuperior, Thymica and Trachealis.

The Thymica and Trachealis on each ſide are in ſome ſubjects only branches of one ſmall trunk, which ſprings from the common trunk of the right Subclavian and Carotid.

They are generally ſmall arteries which run ſometimes ſeparate, and ſometimes partly ſeparate and partly joined.

The Subclavian ſends off likewiſe the Mammaria Interna, Vertebrales Cervicales, and ſometimes ſeveral of the upper Intercoſtales.

The Axillary Artery which is only a continuation of the Subclavian, from where it goes out of the Thorax, to the Axilla, detaches chiefly the Mammaria externa or Thoracica ſuperior, Thoracica inferior, Scapulares externæ, Scapularis interna, Humeralis or Muſcularis, &c. Afterwards it is continued by different ramifications and under different names, over the whole arm, all the way to the ends of the fingers.

The ſuperior portion of the Aorta deſcendens gives off the Arteriæ bronchiales, which ariſe ſometimes by a ſmall common trunk, ſometimes ſeparate, and ſometimes do not come immediately from the Aorta. It next ſends off the Oeſophagææ, which may be looked upon as Mediaſtinæ poſteriores; and then the Intercoſtales from its poſterior part, which in ſome ſubjects come all from this portion of the Aorta, in others only the loweſt eight or nine.

The ſmall anterior arteries here mentioned are generally at their origins, ſingle and in uneven numbers, but they divide ſoon after, toward the right and left.

The inferior portion of the deſcending Aorta, as it paſſes through the diaphragm, gives off the Diaphragmaticæ inferiores or phrenicæ, which however do not always come immediately from the Aorta. Afterwards it ſends off ſeveral branches anteriorly, poſteriorly and laterally.

The anterior branches are the Cæliaca which ſupplies the ſtomach, liver, ſpleen, pancreas, *&c.* the Meſenterica ſuperior which goes chiefly to the meſentery, to the ſmall inteſtines, and that part of the great inteſtines, which lies on the right ſide of the abdomen; the Meſenterica inferior, which goes to the great inteſtines on the left ſide, and produces the Hemorrhoidalis interna; and laſtly, the right and left Arteriæ ſpermaticæ.

The poſterior branches are the Arteriæ lumbares, of which there are ſeveral pairs, and the Sacræ, which do not always come from the trunk of the Aorta.

The lateral branches are the Capſulares and Adipoſæ, the origin of which often varies; the Renales formerly termed Emulgentes, and the Iliacæ which terminate the Aorta by the biſurcation already mentioned.

The Iliac artery on each ſide, is commonly divided into the external or anterior, and internal or poſterior.

The internal Iliaca is likewiſe named Arteria Hypogaſtrica; and its ramifications are diſtributed to the viſcera contained in the Pelvis, and to the neighbouring parts, both internal and external.

The Iliaca Externa, which is the true continuation of the Iliac Trunk, and alone deſerves that name, goes on to the Inguen, and then out of the Abdomen, under the Ligamentum Fallopii; having firſt detached the Epigaſtrica which goes to the Muſculi Abdominis Recti. Having quitted the Abdomen, it commences Arteria Cruralis, which runs down upon the thigh, and is diſtributed by many branches and ramifications to all the lower extremity.

We ſhall now go on to examine particularly all the capital or original branches of the Aorta, from their origin, to the entry of them and of their ramifications into all the parts of the body, and all the different viſcera and organs.

### Arteriæ Cardiacæ ſive Coronariæ Cordis.

The cardiac or coronary arteries of the heart, ariſe from the Aorta immediately on its leaving the heart. They are two in number, and according to the natural ſituation of the heart, one is rather ſuperior than anterior, the other rather inferior than poſterior.

They go out near the two ſides of the pulmonary artery, which having firſt ſurrounded, they afterward run upon the baſis of the heart in form of a kind of crown or garland, from whence they are called Coronariæ; and then purſue the ſuperficial traces of the union of the two ventricles, from the baſis of the heart to the apex.

They ſend communicating branches to each other, which are afterward loſt in the ſubſtance of the heart.

We ſometimes meet with a third coronary artery which ariſes from the Aorta more backward, and is ſpent on the poſterior or lower ſide of the heart.

### The Arteriæ Carotides in general.

The Carotid arteries are commonly demonſtrated after the Subclavian; but it is better to deſcribe them firſt, that we may afterwards be able to purſue the arteries of the Thorax ariſing partly from the Subclaviæ and partly from the Aorta deſcendens, without interruption.

Theſe arteries are two in number, one called the right Carotid, the other the left. They ariſe near each other, from the curvature or arch of the Aorta; the left immediately; the right moſt commonly from the trunk of the Subclavia on the ſame ſide, as has been already obſerved.

They run upon each ſide of the Trachea Arteria, between it and the internal jugular vein, as high as the Larynx, without any ramification. During this courſe, therefore, they may be named Carotid trunks or general, common and original Carotids. Each of theſe trunks is afterwards ramified in the following manner.

The trunk having reached as high as the Larynx, is divided into two large branches or particular Carotids, one named External, the other Internal, becauſe the firſt goes chiefly to the external parts of the head, the ſecond enters the Cranium and is diſtributed to the brain.

The external Carotid is anterior, the internal, poſterior; and the external is even ſituated more inward and nearer the Larynx than the other; but the common names may ſtill be retained, as being taken not from their ſituation, but from their diſtribution.

### ARTERIA CAROTIS EXTERNA.

The external Carotid is the ſmalleſt, and yet appears by its direction to be a continuation of the common trunk. It runs inſenſibly outward, between the external angle of the lower jaw, and the parotid gland, which it ſupplies as it paſſes. Afterwards it aſcends on the foreſide of the ear, and ends in the temples.

In this courſe it ſends off ſeveral branches which may well enough be divided into anterior or internal, and poſterior or external; and the principal branches of each kind are theſe.

The firſt anterior or internal branch goes out from the very origin of the Carotid on the inſide; and having preſently afterward taken a little turn, and ſent off branches to the jugular glands near it, to the fat and ſkin; it runs tranſverſely, and is diſtributed to the Glandulæ Thyroidææ, and to the muſcles and other parts of the Larynx: for which reaſon it may be named Laryngæa or Gutturalis ſuperior. It likewiſe ſends ſome branches to the Pharynx and muſcles of the Os Hyoides.

The ſecond anterior branch paſſes over the neareſt cornu of the Os Hyoides, to the muſcles of that bone and of the tongue; and to the Glandulæ ſublinguales; afterwards paſſing before the cornu of the Os Hyoides, it loſes itſelf in the tongue, from whence it has been called Arteria ſublingualis; and is the ſame artery which others have named Ranina.

The third branch or Arteria Maxillaris inferior goes to the maxillary gland, to the ſtyloide and maſtoide muſcles, to the parotid and ſublingual glands, to the muſcles of the Pharynx, and to the ſmall Flexors of the head.

The fourth branch, which we name Arteria Maxillaris externa, paſſes anteriorly on the maſſeter muſcle, and middle of the lower jaw near the chin, from whence it has a denomination in ſome languages, which cannot be expreſſed in Engliſh. Afterwards it runs under the Muſculus Triangularis Labiorum, which it ſupplies as well as the Buccinator and the Quadratus Menti.

It ſends off a particular branch, very much contorted, which divides at the angular commiſſure of the lips, and running in the ſame manner along the ſuperior and inferior portions of the Muſculus orbicularis, it communicates on both ſides with its fellow, and thereby forms a kind of Arteria Coronaria Labiorum.

Afterwards it aſcends towards the Nares, and is diſtributed to the muſcles, cartilages and other parts of the noſe, ſending down ſome twigs, which communicate with the coronary artery of the lips. Laſtly, it reaches the great angle of the eye, and is ramified and loſt on the Muſculus Orbicularis Palpebrarum, Superciliaris and Frontalis. Through all this courſe, it is named Arteria Angularis.

The fifth branch ariſes over-againſt the Condyle of the lower jaw, and as it is very conſiderable, it may be called Maxillaris Interna. It paſſes behind the Condyle, and having given off a twig among the Muſculi Pterygoidæi; it is divided into three principal branches.

The firſt branch goes through the inferior Orbitary or ſpheno-maxillary fiſſure to the orbit, after having ſupplied the Muſculi Periſtaphylini, and the glandulous membrane of the poſterior Nares, through the Foramen Spheno-Palatinum. We name this branch Spheno-Maxillaris.

It is diſtributed inferiorly and laterally to the parts contained in the orbit, and detaches a ſmall ſubaltern branch through the extremity of the ſuperior orbitary or ſphenoidal fiſſure, which enters the Cranium, and is ſpent upon the Dura Mater, communicating there with the other artery of the Dura Mater, which enters by the Foramen Spinale of the ſphenoidal bone.

It ſends off likewiſe another ſubaltern branch, which paſſes through the poſterior opening of the orbitary canal, and having furniſhed the maxillary ſinus and the teeth, goes out by the inferior orbitrary hole, and on the cheek communicates with the angular artery.

The ſecond of the three branches runs through the canal of the lower jaw, and being diſtributed to the Alveoli and teeth, goes out at the hole near the chin, and loſes itſelf in the neighbouring muſcles, communicating with the Rami of the Arteria Maxillaris externa.

The third branch of the Maxillaris interna runs up between the internal and external Carotids, paſſes through the Foramen Spinale of the ſphenoidal bone, and is diſtributed to the Dura Mater by ſeveral ramifications which run forward, upward and backward; the uppermoſt communicating with thoſe on the other ſide, above the longitudinal ſinus of the Dura Mater.

This artery is of the Dura Mater which may be termed Spheno-ſpinalis, to diſtinguiſh it from thoſe that go to the ſame part by another courſe, ariſes ſometimes from the trunk of the external Carotid, behind the origin of the Laryngæa or Gutturales ſuperior, and ſometimes from the firſt ramus of the Maxillaris interna, juſt before it enters the Spheno maxillary fiſſure.

The ſixth anterior or internal branch, which is very ſmall, is ſpent on the Muſculus Maſſeter.

The firſt external or poſterior branch is named Arteria Occipitalis. It paſſes obliquely before the internal jugular vein, and having twigs to the Muſculus Stylo-Hyoidæus, Stylo-Gloſſus and Digaſtricus, it runs between the ſtyloide and maſtoide apophyſes, along the maſtoide groove, and goes to the muſcles and integuments which cover the Os Occipitis, turning ſeveral times in an undulating manner as it aſcends backward.

It communicates by a deſcending branch with the vertebral and cervical arteries, as has been already ſaid; near the top of the head, it communicates likewiſe with the poſterior branches of the temporal artery, and it ſends a branch to the Foramen Maſtoidæum.

The ſecond external branch ſpreads itſelf on the outward ear, by a great many ſmall twigs on each ſide, ſeveral of which run inward, and furniſh the cartilages, Meatus Auditorius, ſkin of the Tympanum and internal ear.

The trunk of the external Carotid aſcends afterward above the Zygoma, paſſing between the angle of the lower jaw and Parotid Gland, and forms the temporal artery, which divides into an anterior, middle and poſterior branch.

The anterior branch of the temporal artery goes to the Muſculus Frontalis, communicates with the Arteria Angularis, and ſometimes gives off a very ſmall artery, which pierces the internal apophyſis of the Os Malæ all the way to the orbit. The middle branch goes partly to the Muſculus Frontalis, partly to the Occipitalis. The poſterior branch goes to the Occiput, and communicates with the Arteria Occipitalis. All theſe branches likewiſe furniſh the integuments.

## ARTERIA CAROTIS INTERNA.

The internal carotid artery leaving the general trunk, is at firſt a little incurvated, appearing as if either it were the only branch of that trunk, or a branch of the trunk of the external Carotid. Sometimes the curvature is turned a little outward, and then more or leſs inward, paſſing behind the neighbouring external Carotid.

It is ſituated a little more backward than the Carotis Externa, and generally runs up without any ramification, as high as the lower orifice of the great canal of the Apophyſis Petroſa of the Os Temporis. It enters this orifice directly from below upward, and afterward makes an angle according to the direction of the canal, the reſt of which it paſſes horizontally being covered by a production of the Dura Mater.

At the end of this canal it is again incurvated from below upward, and enters the Cranium through a notch of the ſphenoidal bone. Then it bends from behind, forward, and makes a third angle on the ſide of the Sella Sphenoidalis; and again a fourth, under the clinoide apophyſis of that Sella.

As it leaves the bony canal to enter the Cranium, it ſends off a branch through the ſphenoidal fiſſure to the orbit and eye; and ſoon afterward, another, through the Foramen Opticum, by which it communicates with the external Carotid.

Afterwards the internal Carotid runs under the baſis of the brain to the ſide of the Infundibulum, where it is at a ſmall diſtance from the internal Carotid of the other ſide, and there it commonly divides into two principal branches, one anterior, and one poſterior.

The anterior branch runs forward under the brain, firſt ſeparating from that on the other ſide, then coming nearer again, it unites with it by an anaſtomoſis or communication in the interſtice between the olfactory nerves. Afterwards having ſent off ſome ſmall arteries, which accompany theſe nerves, it leaves its fellow, and divides into two or three branches.

The firſt of theſe branches goes to the anterior lobe of the brain; the ſecond, which is ſometimes double, is inverted on the Corpus Calloſum, to which it gives ſome ramifications, as alſo to the Falx of the Dura mater, and middle lobe of the brain. The third which in ſome ſubjects is a diſtinct branch, in others only a diviſion of the ſecond, goes to the poſterior lobe of the brain. This might be looked upon as a third principal branch lying between the other two.

The poſterior branch communicates firſt of all with the vertebral artery of the ſame ſide, and then divides into ſeveral rami which run between the ſuperficial circumvolutions of the brain; and are ramified in many different directions on and between theſe circumvolutions, all the way to the bottom of the Sulci.

All theſe ramifications are covered by the Pia Mater, in the duplicature of which they are diſtributed, and form capillary reticular textures in great numbers; and afterwards they are loſt in the inner ſubſtance of the brain. The anterior and middle branches produce the ſame kind of ramifications; and the anterior, in particular, ſends a twig to the Corpus Calloſum.

## ARTERIA SUBCLAVIA.

The ſubclavian Arteries are named from their ſituation near the Claviculæ, in the tranſverſe direction of which they run. They are two in number, one right, the other left; and they ariſe from the arch of the Aorta, on each ſide of the left Carotid, which commonly lies in the middle between them; but when both Carotids go out ſeparately, they both lie between the Subclaviæ. Theſe arteries terminate, or rather change their name, above the middle of the two firſt ribs, between the anterior inſertions of the Muſculi Scaleni.

The right Subclavian is larger at the beginning, than the left, when it produces the right Carotid; its origin is likewiſe more interior and higher, becauſe of the obliquity of the arch of the Aorta; for which reaſon alſo the left is ſhorter than the right, and runs more obliquely. Both of them are diſtributed much in the ſame manner; and therefore the deſcription of one may likewiſe be applied to the other.

The right Subclavian, the longeſt of the two, gives off, firſt of all, ſmall arteries to the Mediaſtinum, Thymus, Pericardium, Aſpera Arteria, *&c.* which are named Mediaſtinæ, Thymicæ, Pericardiæ, and Trachealis. Theſe ſmall arteries ſometimes go out from the Subclavian itſelf, either ſeparately or by ſmall common trunks; ſometimes they are branches of the Mammaria interna, eſpecially the Mediaſtina.

Afterward this right Subclavian, at about a finger's breadth from its origin, often produces the common Carotid of the ſame ſide; and at a ſmall finger's breadth from the Carotid, it gives off commonly three conſiderable branches, *viz.* the Mammaria interna, Cervicalis, and Vertebralis, and ſometimes an intercoſtal artery which goes to the firſt ribs called Intercoſtalis ſuperior.

## ARTERIA THYMICA.

The Arteria Thymica communicates with the Mammaria interna, and ſometimes ariſes from the anterior middle part of the common trunk of the Subclavian and Carotid. The Thymus receives likewiſe ſome rami from the Mammaria interna, and Intercoſtales ſuperior. The ſame obſervation may be applied to the Mediaſtina and Pericardia.

## ARTERIA PERICARDIA.

The Pericardia ariſes much in the ſame manner with the Thymica, and runs down upon the Pericardium all the way to the Diaphragm, to which it ſends ſome ſmall ramifications.

## ARTERIA MEDIASTINA.

The Mediaſtina ariſes ſometimes immediately after the Thymica, and is diſtributed principally to the Mediaſtinum.

## ARTERIA TRACHEALIS.

The Trachealis, which may likewiſe be named Gutturalis inferior, runs up from the Subclavi, in a winding courſe, along the Aſpera Arteria, to the Glandulæ Thyroidææ, and Larynx, detaching ſmall arteries to both ſides, one of which runs to the upper part of the Scapula.

## ARTERIA MAMMARIA INTERNA.

The internal Mammary Artery comes from the anterior and lower ſide of the Subclavia, near the middle of the Clavicula, and runs down for about one finger's breadth, behind the cartilages of the true ribs, an inch diſtant from the Sternum.

In its paſſage it ſends rami to the Thymus, Mediaſtinum, Pericardium, Pleura, and intercoſtal muſcles. It likewiſe detaches other branches, through theſe muſcles, and between the cartilages of the ribs, to the Pectoralis major, and other neighbouring muſcular portions, to the Mammæ, Membrana Adipoſa and ſkin.

Several of theſe rami communicate by anaſtomoſes, with the Mammaria externa, and other arteries of the Thorax, eſpecially in the ſubſtance of the Pectoralis Major, and likewiſe with the Intercoſtales. Afterwards it goes out of the Thorax on one ſide of the Appendix Enſiformis, and is loſt in the Muſculus Abdominis Rectus, a little below its upper part; communicating at this place, by ſeveral ſmall ramifications with the Arteria Epigaſtrica; and in its courſe, it gives branches to the Peritonæum, and to the anterior parts of the oblique and tranſverſe muſcles of the Abdomen.

## ARTERIA CERVICALIS.

The Cervical Artery ariſes from the upper ſide of the Subclavian, and is preſently afterward divided into two, which come out ſometimes ſeparately, ſometimes by a ſmall common trunk. The largeſt of theſe two arteries is anterior, the other poſterior.

The Anterior Cervicalis, running behind the Carotid of the ſame ſide, is diſtributed to the Muſculus Coraco-Hyoidæus, Maſtoidæus, Cutaneus, Sterno-Hyoidæus, and Sterno-Thyroidæus, to the jugular glands, the Aſpera Arteria, the muſcles of the Pharynx, Bronchia, Oeſophagus and to the anterior muſcles which move the neck and head. This artery has been obſerved to ſend out the Intercoſtalis ſuperior.

The poſterior Cervicalis ariſes ſometime a little after the Vertebralis, and ſometimes from that artery. It paſſes under the tranſverſe apophyſis of the laſt Vertebra of the Neck; and ſometimes through a particular hole in that apophyſis; and from thence runs up backward in a winding courſe, on the vertebral muſcles of the neck, and then returns in the ſame manner.

It communicates with a deſcending branch of the occipital artery, and with another of the vertebral artery above the ſecond Vertebra. It is diſtributed to the Muſculi Scaleni, Angularis Scapulæ, and Trapezius, and to the jugular glans and integuments.

### ARTERIA VERTEBRALIS.

The Vertebral artery goes out from the poſterior and upper ſide of the Subclavian, almoſt oppoſite to the Mammaria Interna and Cervicalis. It runs up through all the holes in the tranſverſe apophyſes of the Vertebra of the neck, and in its paſſage ſends off little twigs through the lateral notches of theſe Vertebræ, to the Medulla Spinalis and its coverings. It alſo gives arteries to the vertebral muſcles, and to other muſcles near them.

As it paſſes through the tranſverſe hole of the ſecond Vertebra, it is generally incurvated, to accommodate itſelf to the particular obliquity of this Foramen. And between this hole and that in the firſt Vertebra, it takes another larger turn in a contrary direction to the former. Having paſſed the tranſverſe hole of the firſt Vertebra, it is conſiderably incurvated a third time, from before backwards, as it goes through the ſuperior and poſterior notch in this Vertebra.

At this third curvature, it ſends off a ſmall branch which is ramified on the outer and poſterior parts of the Occiput, and communicates with the cervical and occipital arteries. Having afterwards reached the great Foramen of the Os Occipitis, it enters the Cranium and pierces the Dura Mater; and on theſe accounts it may be named Arteria Occipitalis poſterior, to diſtinguiſh it from the other which is lateral.

As ſoon as it enters the Cranium, it ſends ſeveral ſmall ramifications to the back part of the Medulla Oblongata, and to the Corpora Olivaria and Pyramidalia, which are likewiſe ſpread on the back ſides of the fourth ventricle of the brain, and form the Plexus Choroides of the Cerebellum.

Afterwards it advances on the Apophyſis Baſilaris of the Os Occipitis, inclining by ſmall degrees toward the vertebral artery of the other ſide, all the way to the extremity of that apophyſis, where they both join in one common trunk, which may be named Arteria Baſilaris.

### ARTERIA BASILARIS.

The Arteria Baſilaris runs forward under the great tranſverſe protuberance of the Medulla oblongata, to which it gives ramifications, as well as to the neighbouring parts of the Medulla. Sometimes this artery divides again near the extremity of the Apophyſis Baſilaris into two lateral branches, which communicate with the poſterior branches of the two internal Carotides, and are loſt in the poſterior lobe of the brain.

### ARTERIÆ SPINALES.

The Spinal Arteries are two in number, one anterior and one poſterior; both produced by both Vertebrales, each of which, as ſoon as it enters the Cranium, ſends out a ſmall branch, by the union of which, the poſterior Spinalis is formed. Afterwards the Vertebralis advancing on the Apophyſis Baſilaris or production of the Occipital bone, detach backward two other ſmall branches, which likewiſe meet, and by their union form the Spinalis anterior. Theſe ſpinal arteries run down on the fore and back ſides of the Medulla Spinalis, and by ſmall tranverſe ramifications, communicate with thoſe which the intercoſtal and lumbar arteries ſend to the ſame part.

### ARTERIA AUDITORIA INTERNA.

The Internal Auditory Artery goes off from each ſide of the Arteria Baſilaris, to the organ of hearing, accompanying the auditory nerve, having firſt furniſhed ſeveral ſmall twigs to the Membrana Arachnoides.

### ARTERIA MENINGÆA poſterior.

The poſterior Meningæa ariſes from the ſame trunk with the Auditoria Interna, and goes to the back part of the Dura Mater, on the occipital and temporal bones, and likewiſe ſupplies the neighbouring lobes of the brain.

### ARTERIA INTERCOSTALIS ſuperior.

When the ſuperior Intercoſtal Artery does not go out from the trunk of the Aorta deſcendens, it commonly ariſes from the lower ſide of the Subclavian, and runs down on the inſide of the two, three or four uppermoſt true ribs, near their heads, and ſends off under each rib, a branch which runs along the lower edge, and ſupplies the intercoſtal muſcles and neighbouring parts of the Pleura.

Theſe branches or particular intercoſtal arteries communicate with each other at different diſtances by ſmall Rami, which run upward and downward from one to the other, on the intercoſtal muſcles.

They likewiſe give branches to the Muſculi Sterno-Hyoidæi, Subclavius, Vertebrales, and bodies of the Vertebræ; and alſo to the Pectoralis major and minor, piercing the intercoſtal muſcles; and laſtly, they ſend branches through the notches of the firſt four Vertebræ to the Medulla Spinalis and its coverings.

Sometimes the ſuperior common intercoſtal artery comes from the Cervicalis, and not immediately from the Subclavia. Sometimes it ariſes from the Aorta deſcendens, either by ſmall ſeparate arteries or by a common trunk, which divides as it runs obliquely up upon the ribs. Laſtly, it ſometimes ariſes from the neareſt Bronchialis, or from ſeveral Bronchiales together.

### Ductus Arterioſus in Liagamentum verſus.

The Ductus Arterioſus, which is found only in the fœtus and in very young children, ariſes from the Aorta deſcendens, immediately below the left Subclavian artery. In adults, this duct is ſhrunk up and cloſed, and appears only like a ſhort ligament adhering by one end to the Aorta, and by the other to the Pulmonary artery, ſo that in reality it deſerves no other name than that of Ligamentum Arterioſum.

### ARTERIA BRONCHIALIS.

The Bronchial arteries go ſometimes from the foreſide of the ſuperior deſcending Aorta, ſometimes from the firſt

Intercoſtal, and ſometimes from the Arteria Oeſophagæa. Sometimes they ariſe ſeparately from each ſide, to go to each lung, and ſometimes by a ſmall common trunk, which afterwards ſeparates towards the right and left hand, at the Biſurcation of the Aſpera Arteria, and accompany the ramifications of the Bronchia.

The Bronchial artery on the left ſide often comes from the Aorta, while the other ariſes from the ſuperior Intercoſtal on the ſame ſide, which variety is owing to the ſituation of the Aorta. Sometimes there is another Bronchial artery which goes out from the Aorta poſteriorly, near the ſuperior Intercoſtal, above the Bronchialis anterior.

The anaſtomoſes or communications between the Bronchial artery and the neighbouring veſſels, eſpecially thoſe with the Pulmonary vein, the Vena azygos, *&c.* are very numerous, and deſerve particular attention.

The Bronchialis gives a ſmall branch to the neighbouring auricle of the heart, which communicates with the Arteria Coronaria.

## ARTERIÆ OESOPHAGÆÆ.

The Oeſophagææ are generally two or three in number, ſometimes but one. They ariſe anteriorly from the Aorta deſcendens, and are diſtributed to the Oeſophagus, *&c.* Sometimes the uppermoſt Oeſophagæa produces a Bronchial artery.

## ARTERIÆ INTERCOSTALES INFERIORES.

The inferior Intercoſtals are commonly ſeven or eight on each ſide, and ſometimes ten, when the ſuperior Intercoſtals ariſe likewiſe from the Aorta deſcendens ; in which caſe theſe run obliquely upward, as has been already ſaid.

They ariſe along the backſide of the deſcending Aorta in pairs, all the way to the diaphragm, and run tranſverſely toward each ſide, on the bodies of the Vertebræ. Thoſe on the right ſide paſs behind the Vena Azygos ; and afterwards they all run to the Intercoſtal muſcles, along the lower edge of the ribs, all the way to the Sternum or near it.

They ſend branches to the Plura, to the Vertebral muſcles, to thoſe muſcles which lie on the outſides of the ribs, and to the upper portions of the muſcles of the Abdomen; and they communicate with the Arteriæ Epigaſtricæ and Lumbares.

Sometimes, inſtead of going out from the Aorta in pairs, they ariſe by ſmall common trunks, which afterwards divide, and ſend an artery to each neighbouring rib.

Before they take their courſe along the ribs, each of them detaches one branch between the tranſverſe apophyſes on both ſides, to the Vertebral muſcles, and another which enters the great canal of the Spina Dorſi. Each of theſe latter branches divides at leaſt into two ſmall arteries, one of which runs tranſverſely on the anterior ſide of the canal, the other on the poſterior ſide. Both of them communicate with the like arteries from the other ſide of the Spine, in ſuch a manner, as to form a kind of arterial rings, which likewiſe communicate with each other by other ſmall ramifications. The ſame is to be obſerved in the Arteriæ Lumbares.

Afterwards each Intercoſtal artery having reached the middle of the rib or a little more, divides into two principal branches, one internal, the other external. Soon after this diviſion, the arteries that run upon the falſe ribs, ſeparate a little from them, being gradually bent downward one after another, and are ſpread upon the Abdominal muſcles. They are likewiſe diſtributed to other neighbouring muſcles, and particularly to thoſe of the diaphragm, almoſt in the ſame manner with the Arteriæ Phrenicæ. They alſo communicate with the Lumbares, and ſometimes with branches of the Hypogaſtricæ.

### ARTERIÆ AXILLARES.

The Subclavian artery having left the Thorax immediately above the firſt rib, in the Interſtice left between the portions of the Scalenus, there receives the name of Axillaris, becauſe it paſſes under the Axilla.

In this courſe it gives off from its inſide, a ſmall branch to the inſide of the firſt rib; and afterwards, four or five principal branches, *viz.* The Thoracica ſuperior or Mammaria externa, Thoracica inferior, Muſcularis or Scapularis externa, Scapularis interna, and Humeralis.

### ARTERIA THORACICA Superior.

The ſuperior Thoracica or external mammary artery, runs down in a winding courſe on the lateral parts of the Thorax, and croſſes the ribs. It gives branches to the two pectoral muſcles, to the Mamma, Muſculus Subclavius, Serratus Major, Latiſſimus Dorſi, and to the upper portions of the Coraco-Brachialis and Biceps.

Theſe branches are ſometimes ſeparate for ſome ſpace; and one of them in particular runs down between the Deltoides and Pectoralis Major, together with the Vena Cephalica to which it adheres very cloſely, the extremity of it piercing the coat of that vein, as if there were an anaſtomoſis between them. Another ſometimes runs between the Muſculus Brachiæus and Anconæus internus, which communicates with a branch of the radial artery.

### ARTERIA THORACICA Inferior.

The inferior Thoracic Artery runs along the inferior Coſta of the Scapula, to the Muſculus Subſcapularis, Teres major and minor, Infra Spinatus Latiſſimus Dorſi, Serratus major, and the neighbouring intercoſtal muſcles, communicating with the Arteriæ Scapulares.

### ARTERIÆ SCAPULARES.

The external Scapulary Artery paſſes through the notch in the ſuperior Coſta of the Scapula, to the Muſculus Supra-ſpinatus and Infra-ſpinatus, Teres major and minor, and to the Articulation of the Scapula with the Os Humeri.

The internal Scapularis ariſes from the axillary artery near the Axilla, and runs backward, to be diſtributed to the Subſcapularis, giving branches to the Serratus Major, to the axillary glands, and to the Teres major, upon which it is ramified in different manners. It likewiſe ſends rami to the Infra-ſpinatus and upper portion of the Anconæi.

### ARTERIA HUMERALIS.

The Humeral Artery ariſes from the lower and foreſide of the Axillaris, and runs backward between the head of the Os Humeri and Teres major, ſurrounding the articulation, till it reaches the poſterior part of the Deltoides to which it is diſtributed.

During this courſe, it gives ſeveral branches to the ſuperior portions of the Anconæi, to the capſular ligament of the joint of the ſhoulder, and to the Os Humeri itſelf, through ſeveral holes immediately below the great tuberoſity of the head of that bone. It likewiſe communicates with the ſcapulary artery.

Oppoſite to the origin of this humeral artery, the Axillares ſend off another ſmall branch, which runs in a contrary direction between the head of the Os Humeri and the common upper part of the Biceps and Coraco-Brachialis; and having given branches to the Vagina and channel of the Biceps, and to the Perioſteum, afterwards joins the principal Humeralis.

### ARTERIA BRACHIALIS.

The axillary artery having given off theſe branches, paſſes immediately behind the tendon of the Pectoralis major, where it changes its former name for that of Arteria Brachialis. It runs down on the inſide of the arm over the Muſculus Coraco-Brachialis, and Anconæus internus, and along the inner edge of the Biceps behind the Vena Baſilica, giving ſmall branches on both ſides to the neighbouring muſcles, to the Perioſteum, and to the bone.

Between the Axilla and middle of the arm it is covered only by the ſkin and fat; but afterwards it is hid under the Biceps, and runs obliquely forward as it deſcends, being at ſome diſtance from the internal condyle; but it does not reach the middle of the fold of the arm.

Between the Axilla and this place, it ſends off many branches to the Infra-ſpinatus, Teres major and minor, Subſcapularis, Latiſſimus Dorſi, Serratus major, and other neighbouring muſcles, to the common integuments and even to the nerves. Below the fold of the arm, it divides into two principal branches, one called Arteria Cubitalis, the other Radialis.

From its upper and inner part it ſends off a particular branch, which runs obliquely downward and backward over the Anconæi, and then turns forward again near the external condyle, where it communicates with a branch of the Arteria Radialis.

Immediately below the inſertion of the Teres major, it gives off another branch, which runs from within outwards, and from behind forward, round the Os Humeri; and deſcends obliquely forward between the Muſculus Brachiæus, and Anconæus externus, to both which it is diſtributed in its paſſage. Having afterwards reached the external condyle, it unites with the branch laſt mentioned, and likewiſe communicates with a branch of the arteries of the fore-arm, ſo that there is here a triple anaſtomoſis.

About the breadth of a finger below this ſecond branch, the brachial artery ſends off a third, which runs down toward the internal condyle, and communicates with other branches of the arteries of the fore-arm, as we ſhall ſee hereafter.

About the middle of the arm, or a little lower, much about the place where the brachial artery begins to be covered by the Biceps; it ſends off a branch, which is diſtributed to the Perioſteum, and penetrates the bone between the Muſculus Brachiæus and Anconæus internus.

About an inch lower, it gives off another branch, which having furniſhed ramifications to the Anconæus internus, runs over the inner condyle, and likewiſe communicates with branches of the arteries of the fore-arm.

Having got below the middle of the arm, the brachial artery detaches another branch which runs behind the inner condyle, in company with a conſiderable nerve; and having paſſed over the muſcles inſerted in this condyle, it communicates with that branch of the cubital artery, which encompaſſes the fold of the arm.

A little lower, it ſometimes ſends out another branch which paſſes on the foreſide of the inner condyle, and then communicates with a branch which runs up from the cubital artery. Theſe three communicating branches are termed Collateral Atreries.

The common trunk of the Brachial Artery having reached the fold of the arm, runs together with a vein and a nerve a nerve immediately under the Aponeuroſis of the Biceps, and paſſes under the Vena Mediana, detaching branches on each ſide to the neighbouring muſcles.

About a large finger's breadth beyond the fold of the arm, this artery divides into two principal branches, one inner or poſterior, named Cubitalis; the other outer or anterior, named Radialis, as has been already ſaid.

From this bifurcation, the brachial artery ſends branches on each ſide, to the Supinator Longus, Pronator Teres, fat and ſkin. It ſometimes tho' very rarely happens, that this artery is divided from its origin into two large branches, which run down on the arm, and afterwards on the fore-arm, where they have the names of Cubitalis and Radialis,

## ARTERIA CUBITALIS-

The Cubital Artery ſinks in between the Ulna, and the upper parts of the Pronator Teres, Perforatus, Ulnaris Gracilis, and Radialis internus; then leaving the bone, it runs down between the Perforatus and Ulnaris internus, all the way to the Carpus and great tranſverſe ligament. In this courſe it winds and turns ſeveral ways, and ſends out ſeveral branches.

The firſt is a ſmall artery which runs inward to the inner condyle, and then turns upward like a kind of recurrent, to communicate by ſeveral branches with the collateral arteries of the arm already mentioned, and particularly with the third. A little lower down, another ſmall branch goes off, which having run upward a little way, and almoſt ſurrounded the articulation, communicates with the ſecond collateral artery of the arm, between the Olecranum and inner condyle.

Afterwards the Cubital Artery having in its courſe between the heads of the Ulna and Radius, reached the interoſſeous ligament, ſends off two principal branches, one internal, the other external, which we call the Interoſſeous Arteries of the fore-arm.

The external artery pierces the ligament about three fingers breadth below the articulation; and preſently afterwards gives off a branch, which runs up like a recurrent toward the external condyle of the Os Humeri under the Ulnaris externus, and Anconæus minimus, to which it is diſtributed, as alſo to the Supinator brevis; and it communicates with the collateral arteries of the arm on the ſame ſide.

Afterward this external interoſſeous artery runs down on the outſide of the ligament, and is diſtributed on the Ulnaris externus, Extenſor Digitorum communis, and to the Extenſores Pollicis, Indicis and Minimi Digiti; communicating with ſome branches of the internal interoſſeous artery.

Having reached the lower extremity of the Ulna, it unites with a branch of the internal interoſſeous artery, which at this place runs from within outward; and is diſtributed together with it on the convex ſide of the Carpus and back of the hand; communicating with the Arteria Radialis and with a branch of the Cubitalis which will be mentioned hereafter.

By theſe communications, this artery forms a ſort of irregular arch, from whence branches are detached to the external interoſſeous muſcles, and to the external lateral parts of the fingers.

The internal interoſſeous artery runs down very cloſe to the ligament, till it reaches below the Pronator Teres, between which and the Pronator Quadratus, it perforates the ligament, and goes to the convex ſide of the Carpus and back of the hand, where it communicates with the external interoſſeous artery, with the Radialis and internal branches of the Cubitalis.

From the origin of the two Interoſſeæ, the cubital artery runs down between the Perforatus, Perforans, and Ulnaris Internus, along the Ulna ſending branches to the neighbouring parts. Below the internal Interoſſea, it ſometimes ſends off a branch which runs down between the Flexor Pollicis, Radialis Internus and Perforatus, to which it is diſtributed all the way to the Carpus, where it runs under the internal annular ligament, and communicates on the hand with branches of the Arteria Radialis.

Afterward the cubital Artery paſſes over the internal tranſverſe ligament of the Carpus, by the ſide of the Os

Piſiforme, and having furniſhed the ſkin, Palmaris brevis and Metacarpius, it ſlips under the Aponeuroſis Palmaris, giving off one branch to the hypothenar Minimi Digiti, and another which runs towards the thumb between the tendons of the flexors of the fingers, and the baſes of the metacarpal bones.

It likewiſe ſends off a branch, which running between the third and fourth bones of the Metacarpus, reaches to the back of the hand, where it communicates with the interoſſeous external artery. Afterwards having ſupplied the interoſſeous muſcles, it communicates with the Radialis; and they both form an arterial arch in the hollow of the hand in the following manner:

The Cubitalis having got about two fingers breadth beyond the internal annular ligament of the Carpus, forms an arch, the convex ſide of which is turned to the fingers, and commonly ſends off three or four branches. The firſt goes to the inner and back part of the little finger; and is ſometimes a continuation or production of that branch which goes to the Hypothenar.

The other three branches run in the Interſtices of the four Metacarpal bones, near the heads of which, each of them is divided into two branches, which paſs along the two internal lateral parts of each finger, from the foreſide of the little finger to the poſterior ſide of the Index excluſively; and at the ends of the fingers, theſe digital-arteries communicate and unite with each other.

Sometimes the arch of the cubital Artery terminates by a particular branch in the middle finger, and in that caſe it communicates with a radial artery, which makes up what the other wants.

This arch ſends likewiſe from its concave ſide, toward the ſecond Phalanx of the thumb, a branch for the lateral internal part thereof, and then ends near the head of the firſt metacarpal bone, by a communication with the Radialis, having firſt given a branch to the foreſide of the Index, and another to the ſide of the thumb next the former. Theſe communicate at the ends of the fingers with the neighbouring branches, as in the other fingers.

This arch ſends likewiſe ſmall twigs to the interoſſeous muſcles, to the Lumbricales, Palmaris, and to other neighbouring parts ; and laſtly, to the integuments.

### ARTERIA RADIALIS

The Radial Artery begins by detaching a ſmall branch which runs upward like a recurrent, toward the fold of the arm, and turns backward round the external Condyle, communicating with the neighbouring branches, from the trunk of the brachial artery, eſpecially with the firſt collateral branch on that ſide.

It runs down along the inſide of the Radius, between the Supinator longus, Pronator teres and the Integuments, giving branches to theſe muſcles, and likewiſe to the Perforatus, Perforans and Supinator brevis. From thence it runs in a winding courſe toward the extremity of the Radius, ſupplying the Flexors of the thumb and Pronator quadratus.

Having reached the extremity of the Radius, it runs nearer the ſkin, eſpecially toward the anterior edge of the bone, being the artery which we there feel when we examine the pulſe.

At the end of the Radius, it gives off a branch to the Thenar ; and after having communicated with the arch of the Cubital Artery in the palm of the hand, and ſent off ſome cutaneous branches at that place, it detaches one, along the whole internal lateral part of the thumb.

Afterwards it runs between the firſt Phalanx and tendons of the thumb, to the Interſtice between the baſis of this firſt Phalanx and of the firſt metacarpal bone, where it turns toward the hollow of the hand.

At this turning, it ſends off a branch to the external lateral part of the thumb, which having reached the end thereof, communicates by a ſmall arch with the branch which goes to the internal lateral part.

It likewiſe ſends branches outward, which run more or leſs tranſverſely between the firſt two bones of the Metacarpus and the two tendons of the Radialis externus ; and it communicates with an oppoſite branch of the Cubitalis, together with which it furniſhes the external interoſſeous muſcles and integuments of the back of the hand and convex ſide of the Carpus.

Laſtly, the Radial Artery terminates, in its paſſage over the ſemi-interoſſeous muſcle of the Index, near the baſis of the firſt metacarpal bone, and as it runs under the tendons of the flexor muſcles of the fingers, where it is joined to the arch of the Cubitalis.

It ſends off another branch which runs along the fore part of the firſt bone of the Metacarpus, to the convex ſide of the Index, where it is loſt in the integuments.

It gives likewiſe a branch to the internal lateral part of the Index, which at the end of that finger, joins an oppoſite branch which comes from the arch of the Cubitalis. It alſo ſends off a ſmall branch acroſs the internal interoſſeous muſcles, where it forms a kind of ſmall irregular arch, which communicates with the great arch by ſeveral ſmall arterial rami.

When the arch of the Cubitalis ends at the middle finger, the Radialis runs along the inner or concave part of the firſt metacarpal bone, at the head of which it terminates by two branches.

One of theſe branches runs along the inner and anterior lateral part of the Index; the other paſſes between the Flexor Tendons of this finger and the metacarpal bone, and having communicated with the cubital branch of the middle finger, it advances on the poſterior lateral part of the Index all the way to the end of that finger, where it unites again with the firſt branch.

### ARTERIA DIAPHRAGMATICA.

The left Diaphragmatic Artery goes out commonly from the Aorta deſcendens, as it paſſes between the Crura of the ſmall muſcle of the Diaphragm. The right Diaphragmatic comes ſometimes from the neareſt Lumbar artery, but moſt commonly from the Cæliaca. Sometimes both theſe arteries ariſe by a ſmall common trunk immediately from the Aorta. They likewiſe have the name of Arteriæ Phrenicæ.

They appear almoſt always in ſeveral ramifications on the concave or lower ſide of the Diaphragm, and ſeldom on the upper or convex ſide. They give ſmall branches to the Glandulæ Renales or Capſulæ Atrabilariæ, which ſometimes communicate with the other arteries that go to the ſame part.

They ſend likewiſe ſmall branches to the fat which lies upon the kidneys, called the Membrana Adipoſa, from whence they have the name of Arteriæ Adipoſæ; and they ſometimes come immediately from the trunk of the Aorta on one ſide of the Meſenterica ſuperior.

Beſides theſe capital Diaphragmatic arteries, there are others of a ſubordinate claſs, which come from the Intercoſtales, Mammariæ internæ, Mediaſtinæ, Pericardiæ and Cæliaca, as is obſerved in the deſcription of each of theſe arteries.

## ARTERIA CÆLIACA.

The Cæliac Artery ariſes anteriorly and a little to the left hand, from the Aorta deſcendens, immediately after its paſſage through the ſmall muſcle of the Diaphragm, nearly oppoſite to the cartilage between the laſt Vertebra of the back and firſt of the loins. The trunk of this artery is very ſhort; and near its origin, it ſends off from the right ſide two ſmall Diaphragmaticæ, tho' ſometimes there is only one which goes to the right hand, and is afterwards diſtributed both ways; communicating with the other arteries of the ſame name which come from the Intercoſtales and Mammariæ. The left branch ſends rami to the ſuperior orifice of the ſtomach and to the Glandula Renalis on the ſame ſide; the right furniſhes the Pylorus, and the renal gland on the right ſide.

Immediately after this, the Cæliaca gives off a conſiderable branch, named Arteria Ventriculi Coronaria, and Gaſtrica, or Gaſtrica ſuperior; and then it preſently divides into two large branches, one toward the right hand named Arteria Hepatica; the other to the left, called Splenica, which is larger than the former.

Sometimes this artery is divided into theſe three branches at the ſame place, very near its origin; the trunk going out from the Aorta, almoſt in a ſtraight line, and the branches

from

from the trunk almoſt at right angles, like radii from an axis, whence this trunk has been called Axis Arteriæ Cæliacæ.

## ARTERIA VENTRICULI CORONARIA.

The Coronary Artery of the ſtomach goes firſt to the left ſide of that organ, a little beyond the ſuperior orifice; round which orifice it throws branches, and alſo to every part of the ſtomach near it; and theſe branches communicate with thoſe which run along the bottom of the ſtomach to the Pylorus.

Afterwards it runs on the right ſide of the ſuperior orifice along the ſmall curvature of the ſtomach, almoſt to the Pylorus, where it communicates with the Arteria Pylorica; and turning towards the ſmall lobe of the liver, it gives off ſome branches to it.

Then it advances, under the Ductus Venoſus, to the left lobe of the liver, in which it loſes itſelf near the beginning of the juſt-mentioned duct, having firſt given off ſome ſmall branches to the neighbouring parts of the Diaphragm and Omentum.

## ARTERIA HEPATICA.

As ſoon as the Hepatic Artery leaves the Cæliaca, it runs to the upper and inner parts of the Pylorus, in company with the Vena Portæ, ſending off two branches, a ſmall one called Arteria Pylorica, and a large one named Gaſtrica Dextra, or Gaſtrica Major.

The Pylorica is ramified on the Pylorus, from whence it has its name; and having diſtributed branches to the neighbouring parts of the ſtomach, which communicate with thoſe of the right Gaſtrica, it terminates on the Pylorus, by an Anaſtomoſis with the Coronary artery of the ſtomach.

The right Gaſtric Artery having paſſed behind and beyond the Pylorus, ſends out a conſiderable branch named Arteria Duodenalis, or Inteſtinalis, which ſometimes comes from the trunk of the Hepatica, as we ſhall ſee hereafter. Afterwards this Gaſtric Artery runs along the right ſide of the great curvature of the ſtomach, to the neighbouring parts of which, on both ſides, it diſtributes branches.

Theſe branches communicate with thoſe of the Arteria Pylorica, and of the Coronaria Ventriculi, and with the right Gaſtro-Epiploicæ, which furniſh the neareſt parts of the Omentum, and communicate with the Meſenterica ſuperior. After this, the right Gaſtric Artery ends in the left, which is a branch of the Splenica.

The Duodenal or Inteſtinal Artery runs along the Duodenum on the ſide next the Pancreas; to both which it furniſhes branches, and alſo to the neighbouring part of the ſtomach. Sometimes this artery goes out from the Meſenterica ſuperior, and ſometimes it is double.

The Hepatic Artery having ſent out the Pylorica and right Gaſtrica, advances behind the Ductus Hepaticus, toward the Veſicula Fellis, to which it gives two principal branches called Arteriæ Cyſticæ; and another named Bilaria, which is loſt in the great lobe of the liver.

Afterwards, this artery enters the fiſſure of the liver, and joins the Vena Portæ, with which it runs within a membranous Vagina, called Capſula Gliſſoni, and accompanies it through the whole ſubſtance of the liver by numerous ramifications, which may be termed Arteriæ Hepaticæ Propriæ.

Before it enters the liver, it gives ſmall branches to the external membrane of this Viſcus, and to the Capſula Gliſſoni. The Gaſtric and proper Hepatic Arteries come ſometimes from the Meſenterica ſuperior, when the ordinary ramifications are wanting.

## ARTERIA SPLENICA.

Immediately after the origin of the Splenic artery from the Cæliaca, it runs toward the left hand, under the ſtomach and Pancreas, to the ſpleen. It adheres cloſely to the poſterior part of the lower ſide of the Pancreas, to which it gives ſeveral branches named Arteriæ Pancreaticæ.

Near the extremity of the Pancreas, under the left portion of the ſtomach, the Splenic Artery gives off a principal branch called Gaſtrica Siniſtra or Minor, which runs from left to right along the left portion of the great curvature of the ſtomach, giving branches to both ſides of this portion, which communicate with thoſe of the Coronaria Ventriculi.

This Gaſtric Artery ſends likewiſe another branch, at leaſt, to the extremity of the Pancreas, which communicates with the other pancreatic arteries. It alſo ſupplies the Omentum with branches, termed Gaſtro Epiploicæ Siniſtræ; and then it communicates with the right Gaſtrica, and from this union, the Gaſtro-Epiploicæ Mediæ are produced.

From this detail we learn that the Arteria Coronaria Ventriculi Pylorica, Inteſtinalis, both Gaſtricæ, Gaſtro-Epiploicæ, and conſequently the Hepatica, Splenica and Meſenterica, communicate all together.

Afterwards the Splenic Artery advances towards the ſpleen, in a courſe more or leſs contorted; but before it arrives at that Viſcus, it gives two or three branches to the large extremity of the ſtomach, commonly called Vaſa Brevia; and one to the Omentum, named Epiploica.

At the ſpleen, this artery divides into four or five branches, which enter that Viſcus, after having given ſome ſmall twigs to the neighbouring parts of the ſtomach and Omentum.

### ARTERIA MESENTERICA SUPERIOR.

The ſuperior Meſenteric Artery ariſes anteriorly from the lower portion of the deſcending Aorta, a very little way below the Cæliaca, going out a little towards the right hand, but bending immediately afterwards to the left.

Near its origin, it gives off a ſmall branch, which dividing into two, goes to the lower ſide of the head of the Pancreas, and neighbouring part of the Duodenum, communicating with the Inteſtinalis by ſmall arches, and Areolæ or maſhes.

Afterwards it paſſes over the Duodenum, between this inteſtine and the Meſeraic Vein, between the two Laminæ of the Meſentery; and then bending in an oblique direction from left to right, and from above downward, by very ſmall degrees, it advances toward the extremity of the Ilium. By this incurvation, it forms a kind of long arch, from the convex ſide of which a great many branches go out.

Theſe branches are ſixteen or eighteen in number, or thereabouts, and almoſt all of them are beſtowed on the ſmall inteſtines, from the lower third part of the Duodenum to the Cæcum and Colon. The firſt branches are very ſhort, and from thence they increaſe gradually in length all the way to the middle of the arch; the reſt diminiſhing again by ſmall degrees.

As they approach the inteſtines, all theſe branches communicate firſt by reciprocal arches; then by Areolæ and maſhes of all kinds of figures, from which is detached an infinite number of ſmall ramifications, which ſurround the inteſtinal canal, like an annular piece of net-work.

Theſe arches and maſhes increaſe in number proportionably to the length of the branches; and their ſize diminiſhes gradually as they approach the Inteſtines.

The firſt branches from the convex ſide of the Meſenteric arch, which are very ſhort, ſupply the Pancreas and Meſocolon, and communicate with the Duodenal Artery. The laſt branches go to the Appendicula Vermiformis, and ſend a portion of an arch to the beginning of the Colon.

The conſiderable branches from the concave ſide of the Meſenteric arch, are ſeldom above two or three in number; but before they ariſe, a ſmall ramus goes out to the Duodenum, and gives ſome very ſmall arteries to the Pancreas.

The firſt conſiderable branch from the concave ſide of the arch goes into the Meſocolon towards the right portion of the Colon, being firſt divided into two rami; the firſt of which runs along the whole ſuperior part of the Colon, where it forms the famous communication with the Meſenterica inferior; and might be named Arteria Colica Superior. The other ramus of this branch runs down on the right portion of the Colon.

The ſecond principal branch having run for ſome ſpace through the Meſentery, divides into three rami; the firſt of which goes to the lower part of the right portion of the Colon, where it communicates with the ſecond ramus of the firſt branch; the ſecond goes to the beginning of the Colon, where it communicates with the firſt, and to the Inteſtinum Cæcum.

The third ramus of this ſecond branch, having communicated with the ſecond, gives ſmall twigs to the Cæcum, Appendicula Vermiformis, and extremity of the Ilium. Afterwards it communicates with the extremity of the arch, or curve trunk of the ſuperior Meſenteric.

All theſe communications are by arches and maſhes, as in thoſe branches that come from the convex ſide of the arch; and it is to be obſerved in general, that all the branches of the Meſenterica ſuperior are diſpoſed according to the folds of the Meſentery and circumvolutions of the inteſtines; giving off branches, through their whole courſe, to the Laminæ of the Meſentery, its cellular ſubſtance, and to the Meſentric glands.

## ARTERIA MESENTERICA INFERIOR.

The lower Meſenteric Artery goes out anteriorly from the Aorta Deſcendens inferior, about a finger's breadth or more above the bifurcation, and below the ſpermatic arteries; and having run about the length of an inch, or ſomething more; it is divided into three or four branches, which gradually ſeparate from each other.

The firſt or ſuperior branch, about an inch from its origin, divides into two rami; the firſt of which runs along the left portion of the Colon, and forms the communication of the two Meſenteric Arteries already mentioned. It may be named Arteria Colica Siniſtra. The ſecond ramus having communicated with the firſt, runs down upon the ſame portion of the Colon.

The middle branch having run the ſame length with the firſt, divides into two rami; one of which paſſes upward on the extremity of the Colon, communicating by arches with the ſecond ramus of the ſuperior branch; the other runs down on the extremity of the ſame inteſtine.

When there is another middle branch, it goes to the firſt part of the double curvature of the Colon, by a like diſtribution and communication from above downward.

The lower branch goes to the ſecond portion of the Colon, or to both, when the ſecond middle branch is wanting, and ſends up a ramus, which communicates with the foregoing.

It ſends another conſiderable branch downward, called Arteria Hæmorrhoidalis interna, which runs down behind the Inteſtinum Rectum, to which it is diſtributed by ſeveral ramifications, and it communicates with the Arteriæ Hypogaſtricæ.

## ARTERIÆ RENALES.

The Renal Arteries, called commonly Emulgents, are ordinarily two in number, and go out laterally from the inferior deſcending Aorta, immediately under the Meſenterica ſuperior, one to the right hand, the other to the left. The right is ſituated more backward, and is longer than the left, becauſe of the Vena Cava, which lies on the right ſide between the Aorta and the Kidney.

They run commonly without diviſion, and almoſt horizontally to the kidneys, into the depreſſions of which they enter by ſeveral branches, which form arches in the inner ſubſtance of theſe Viſcera.

From theſe arches, numerous ſmall rami go out toward the circumference or outer ſurface of the Kidneys. Sometimes there is more than one artery on each ſide; ſometimes this augmentation is only on one ſide, and theſe ſupernumerary arteries come ſometimes immediately from the Aorta, and enter at the upper or lower part of the kidneys.

Ordinarily, the right Renal Artery paſſes behind the Vena Cava and Renal Vein on the other ſide; and the left Artery, firſt behind and then before the vein. Sometimes they ſend branches to the Glandulæ Renales, Membrana Adipoſa of the kidneys, and even to the Diaphragm.

## ARTERIÆ CAPSULARES.

The Arteries of the Renal Glands, which may be termed Arteriæ Capſulares, ariſe ſometimes from the Aorta above the Arteria Renalis, and give out the Arteriæ Adipoſæ, which go to the fat of the kidneys. Sometimes they come from the trunk of the Cæliaca. The right Capſular Artery comes moſt commonly from the Arteria Renalis of the ſame ſide, near its origin; the left, from the Aorta above the Renalis.

## ARTERIÆ SPERMATICÆ.

The Spermatic Arteries are commonly two in number, ſometimes more. They are very ſmall, and go out anteriorly from the Aorta deſcendens inferior, near each other, about a finger's breadth below the Arteriæ Renales, more or leſs, between the two Meſentericæ or between the Renales and Meſentericæ inferiores. Sometimes one is higher, or placed more laterally than the other.

They ſend off to the common membrane of the kidneys, ſmall branches named Arteriæ Adipoſæ; and afterwards they run down upon the Pſoas muſcles, on the foreſide of the Ureters, between the two Laminæ of the Peritonæum.

They give ſeveral conſiderable branches to the Peritonæum, chiefly to thoſe parts of it which are next the Meſentery, and they communicate both with the Meſentericæ and Adipoſæ. They likewiſe ſend ſmall arteries to the Ureters.

Afterwards, they paſs in men through the tendinous openings of the Abdominal Muſcles in the Vagina of the Peritonæum, and are diſtributed to the Teſticles and Epididymes, where they communicate with a branch of the Iliaca externa.

In women they do not go out of the Abdomen, but are diſtributed to the Ovaria and Uterus, and communicate with branches of the Hypogaſtrica, at the jagged extremities of the Tubæ Fallopianæ.

## ARTERIÆ LUMBARES.

The Lumbar Arteries go out poſteriorly from the inferior deſcending Aorta, in five or ſix pairs, or more, much in the ſame manner with the Intercoſtals.

They may be divided into ſuperior and inferior. The ſuperior ſend ſmall branches to the neighbouring parts of the diaphragm and intercoſtal muſcles, and ſupply the place of ſemi-intercoſtal arteries. Sometimes thoſe pairs go out by a ſmall common trunk, and not ſeparately.

They are diſtributed on each ſide to the Pſoas muſcles, to the Quadrati Lumborum, and to the oblique and tranſverſe muſcles of the Abdomen; and by perforating the oblique muſcles, they become external Hypogaſtric arteries. They go likewiſe to the Vertebral muſcles, and to the bodies of the Vertebræ, and enter the Spinal Canal through the lateral notches, to go to the membranes, &c. forming rings much in the ſame manner with the Intercoſtals; and they likewiſe give ſmall twigs to the Nerves.

### ARTERIÆ SACRÆ.

The Arteriæ Sacræ go out commonly from the back part of the inferior deſcending Aorta, at the bifurcation. Sometimes they riſe higher, from the Lumbares, and ſometimes lower, from the Iliacæ. They are two, three, or four in number, and ſometimes but one. They are ramified on the Os Sacrum, and on the neighbouring parts of the Peritonæum, Inteſtinum rectum, fat, &c. and enter the canal of that bone through the anterior holes, being there diſtributed toward each ſide. They likewiſe ſend ſmall arteries to the large Faſciculi of nerves, which go out through the holes of the Os Sacrum, and they penetrate the inner ſubſtance of that bone.

### ARTERIÆ ILIACÆ.

The inferior deſcending Aorta ends at the laſt Vertebra of the loins, and ſometimes higher, in two large lateral branches, one on the right hand, the other on the left, called Arteriæ Iliacæ; each of which is a common trunk to two other arteries of the ſame name. This bifurcation lies on the anterior and left aſide of that of the Vena Cava.

The primitive Iliac Arteries divaricate gradually as they deſcend, advancing obliquely toward the anterior and lower part of the Oſſa Ilium, without any conſiderable ramification for about the breadth of three fingers, except a few very ſmall arteries that go to the Os Sacrum, ſome of which enter by the upper holes, and are diſtributed like the Arteriæ Sacræ, while others emerge again through the poſterior holes, and go to the neighbouring muſcles, &c. They likewiſe give ſmall arteries to the Peritonæum, to the coats of the veins, and to the fat and Ureters, behind which the Iliac trunks paſs.

The right Iliac trunk paſſes firſt, on the foreſide of the origin of the left Iliac vein, and runs down on the foreſide of the right vein, almoſt to the place where it goes out of the Abdomen, its courſe being there directed more inwardly. The left trunk goes down likewiſe before the left vein, but lies a little toward the inſide as it leaves the Abdomen.

About three fingers breadth from their origin, each Iliac trunk is divided into two ſecondary arteries, one external, the other internal. The external artery has no particular name; the internal is termed Hypogaſtrica, which often appears to be no more than a branch of the other, in adults; but in young children, and eſpecially in the fœtus, the Hypogaſtric artery looks like the trunk, and the other like a branch.

The external Iliac on each ſide runs down on the Iliac muſcle to the Ligamentum Fallopii, under which it goes out of the Abdomen. In this courſe, it gives off only a few ſmall arteries, to the Peritonæum and other parts near it; but as it paſſes out of the Abdomen under the ligament, it detaches two conſiderable branches, one internal, the other external.

The internal branch is named Arteria Epigaſtrica, and goes out anteriorly from the external Iliaca. From thence it runs obliquely upward on the tendon of the tranſverſe muſcle toward the poſterior part of the Rectus, which it reaches about two or three fingers breadth above the Os Pubis.

Afterwards the Epigaſtric artery runs up along the poſterior or inner ſide of this muſcle, ſending ramifications to the tendons of the neighbouring muſcles, &c. and then loſes itſelf by a true Anaſtomoſis of ſeveral ramifications, with the Mammaria interna. It likewiſe communicates with the inferior Intercoſtals which are ſpread on the Abdomen.

It ſometimes gives out two particular branches, one of which, accompany'd by a nerve, goes through the Foramen Ovale of the Pelvis to the Triceps muſcles, &c. the other runs down to the teſticles along with the ſpermatic artery, and there communicates with it.

The external branch of the outer Iliaca goes off laterally from the outſide of that artery under the Ligamentum Fallopii, and from thence to the internal Labium of the Os Ilium, where it divides into two, and is ramified on the oblique and tranſverſe muſcles of the Abdomen, communicating with the Arteria Lumbaris.

Beſides theſe two branches, the external Iliaca gives off a ſmall ramus internally, under the Ligament, which runs to the Vagina of the ſpermatic rope; and ſometimes another ſmall twig goes from the outſide, to the Os Ilium.

The internal Iliac or Hypogaſtrica, having run a little more than a finger's breadth inward and backward, bends by ſmall degrees obliquely forward and toward the outſide, and afterwards contracting in its dimenſions, it ends in the Umbilical artery, which ought to be looked upon as a true continuation of the trunk of the Hypogaſtrica.

This Arteria Umbilicalis aſcends on the ſide of the bladder, and having detached ſmall rami to that Viſcus and to the neighbouring parts of the Peritonæum, *&c.* it contracts, and in adults is quite cloſed up, above the middle of the bladder. It likewiſe gives branches to the Uterus and to the neighbouring parts in both ſexes. Afterwards it aſcends in form of a Ligament to the Umbilicus, where it joins the Umbilical artery on the other ſide; its name being taken from its uſe in the Fœtus.

From the convex ſide of the curvature of the Hypogaſtric artery, four or five principal branches commonly go out very near each other. Sometimes they all ariſe ſeparately, ſometimes by ſmall common trunks, and what is the firſt branch in ſome ſubjects, is only a ramus of another principal branch in others; ſo much does the number, diſpoſition, origin, and diſtribution of theſe branches vary in different ſubjects. For this reaſon we ſhall diſtinguiſh them by the following proper names; Iliaca minor, Glutæa, Sciatica, Pudica communis ſive Pudica Hypogaſtrica and Obturatrix.

The Iliaca minor, the moſt poſterior of theſe branches, and which is often no more than a ramus of the Glutæa, paſſes between the laſt two Lumbar Nerves, and divides into two rami, one of which enters the canal of the Os Sacrum through the loweſt large anterior holes; the other paſſes behind the Muſculus Pſoas to which it gives twigs, and behind the Crural nerve, being afterwards diſtributed to the Iliac muſcle, and to the middle part of the inſide of the Os Ilium, penetrating into the ſubſtance of the bone, ſometimes by one hole, ſometimes by more.

The Arteria Glutæa is commonly very conſiderable, and ſometimes the largeſt of all the Hypogaſtric branches. Near its beginning it ſometimes ſends out the Iliaca minor, and ſometimes the ſmall ramus that goes from that artery to the Os Sacrum and other parts fixed to that bone. Afterwards this artery goes out of the Pelvis in company with the Sciatic nerve, thro' the upper part of the great ſinus of the Os Innominatum, below the Muſculus Pyriformis, and is diſtributed in a radiated manner to the Glutæus Maximus and Medius.

In its paſſage, it gives ſome branches to the Os Sacrum, Os Coccygis, Muſculus Pyriformis, the muſcles of the Anus, and to the neighbouring parts of the Inteſtinum Rectum, forming a particular Hemorrhoidalis interna. It likewiſe ſends twigs to the bladder and parts near it; and detaches a pretty long branch which runs down with the Sciatic nerve.

The Arteria Sciatica gives firſt of all, ſome branches to the Muſculus Pyriformis, the Quadrigemini, the Os Sacrum, *&c.* and even to the inner ſide of the Os Iſchium. It likewiſe detaches a branch which runs under the Muſculus Quadratus, to the articulation of the Os Femoris.

It paſſes obliquely over the Sciatic nerve, and as they both go through the great poſterior ſinus of the Os Ilium, it detaches ſmall arteries which are diſtributed to the inner ſubſtance of that nerve. Afterwards it runs up in a radiated manner on the outſide of the Os Ilium, and is diſtributed to the inner ſubſtance of that bone, and to the Muſculi Glutæi, eſpecially to the Medius and Minimus.

The Pudica Communis, called commonly Pudica Interna, ariſes ſometimes by a trunk common to it and to the Glutæa, and gives out two principal branches; the firſt of which paſſes through the great ſinus of the Os Ilium in company with the Glutæa and Sciatica, and then divides into two rami.

The firſt ramus goes behind the Spine of the Iſchium, between the two Ligaments which lie between that bone and the Os Sacrum; and runs on the inſide of the Tuberculum Iſchii, all the way to the origin of the Corpus Cavernoſum Penis. There it divides into ſeveral arteries, one of which goes to the Sphincter Ani, under the name of Hemorrhoidalis externa.

The reſt are diſtributed to the neighbouring integuments, to the bulb of the Urethra, to the Corpus Cavernoſum Penis; but the laſt of theſe arteries, or rather the extremity of this firſt ramus, runs from behind forward, over the neck of the Os Femoris, and communicates with a branch of the Arteria Cruralis.

The ſecond principal ramus called commonly Arteria Pudica externa, runs between the bladder and Inteſtinum Rectum, and is diſtributed in men to the Veſiculæ Seminales, neck of the bladder, proſtate gland, and neighbouring parts of the Rectum.

Afterwards it runs under the Os Pubis on the ſide of a conſiderable vein, which lies directly under the Symphyſis; and it runs along the Penis between this vein and a nerve, being diſtributed in its paſſage to the Corpus Cavernoſum, and communicating with the Pudica minor, which comes from the Cruralis.

This ſecond branch of the Pudica major goes off ſometimes ſeparately from the Hypogaſtrica, eſpecially in women, being diſtributed to the lateral parts of the Uterus, where it communicates with the ſpermatic artery, near the jagged extremity of the Tuba Fallopiana; and to the neighbouring parts of the Vagina, *&c.*

The Arteria Obturatrix perforates the Obturator muſcles from whence it has its name, and goes out of the Pelvis at the upper part of the ligament of the Foramen Ovale, having firſt ſent a ſmall branch over the Symphyſis of the Os Ilium and Os Pubis, to the Inguinal Glands and Integuments.

As it paſſes by the muſcles, it divides and is diſtributed to the Pectineus and Triceps. It likewiſe ſends out another branch, which communicates with that branch of the Sciatica that goes to the articulation of the Os Femoris; and gives ſmall arteries to the holes in the neck of that bone.

Afterwards the Hypogaſtric artery ends in the Umbilicalis, as has been already ſaid.

## ARTERIÆ CRURALES.

The Iliac Artery goes out of the Abdomen between the Ligamentum Fallopii, and tendon of the Pſoas at the union of the Os Ilium and Os Pubis, and there it takes the name of Arteria Cruralis.

It ſends off firſt of all, three ſmall branches; one of which called the Pudica Externa, goes over the Crural vein to the ſkin and ligament of the Penis and to the Inguinal glands, communicating with the Pudica Interna. The ſecond goes to the Muſculus Pectineus; and the third to the upper part of the Sartorius. All theſe branches furniſh likewiſe the neighbouring anterior integuments.

Afterwards the Crural Artery runs down on the head of the Os Femoris, and by taking a particular turn, gets on the inſide of the Crural vein, about three fingers breadth from where it goes out of the Abdomen. From its origin to this place, it is covered only by the ſkin and fat, and lies on the Pectineus and Triceps Primus.

In changing its ſituation, it ſends out three conſiderable branches, one external, one middle, and one internal. They all go out more or leſs poſteriorly, ſometimes by a ſhort common trunk, ſometimes by two, &c.

The external branch runs on the upper ſide of the thigh to the Crureus, Vaſtus Externus, Rectus Anterior, Muſculus Faſciæ Latæ and Glutæus Medius; ſending up a ramus to the apex of the great Trochanter, which communicates with the firſt principal ramus of the Pudica Major, and Sciatica, as has been already ſaid.

The middle branch runs down on the inſide of the thigh between the triceps muſcles, to which it gives ſeveral rami, one whereof perforates the ſecond muſcle, and is diſtributed to the Glutæus Maximus, Semi-Nervoſus, Semi-Membranoſus, Biceps, and to the neighbouring integuments.

The internal branch runs backward on the Quadrigemini towards the great Trochanter; and having detached a ramus which goes into the joint of the Os Femoris, it runs downward, and gives rami to all the muſcles that lie on the backſide of that bone, one of which enters the bone itſelf on one ſide of the Linea Aſpera.

Having ſent off all theſe three branches, the Arteria Cruralis runs down between the Sartorius, Vaſtus internus and Triceps, giving branches to all the parts near it. It is covered by the Sartorius all the way to the lower part of the thigh, where it is inflected backward over the Triceps Tertius a little above the internal Condyle of the Os Femoris. Afterwards continuing its courſe through the hollow of the ham, it is called Arteria Poplitea, being accompany'd by the Vein of the ſame name.

The Poplitea while in the ham, is covered only by the integument, ſending off branches toward each ſide, which run up upon the condyles, and communicate with the lower ramifications of the Arteria Cruralis.

It ſends rami to the joint of the knee, one of which at leaſt paſſes between the crucial ligaments. As it runs down, it ſends branches to the Gaſtrocnemii and Popliteus; and having reached the backſide of the head of the Tibia, it gives off two branches, one to each ſide.

The firſt or internal branch ſurrounds the forepart of the head of the Tibia, paſſing between the bone and internal lateral ligament; and beſides ſeveral other ramifications, ſends up a ſmall branch which communicates with the Arteries that lie round the Condyles of the Os Femoris.

The ſecond or external branch runs over the head of the Fibula, and between the head of the Tibia and external lateral ligament of the knee, ſurrounding the Articulation all the way to the ligaments of the Patella, and communicating with the branches which lie round the Condyles of the Os Femoris, together with a branch of the firſt or internal ramus.

Immediately after the origin of theſe two rami, and before the Poplitea ends, it ſends a ſmall artery down on the backſide of the interoſſeous ligament, very near the Tibia, into which it enters by a particular hole a little above the middle portion of the bone.

As the Poplitea ends, it divides into two principal branches, one of which runs between the heads of the Tibia and Fibula, paſſing from behind forward on the interoſſeous ligament, where it takes the name of Arteria Tibialis Anterior. The ſecond branch divides into two others, one internal and largeſt, called Arteria Tibialis poſterior, the other poſterior and ſmalleſt, named Arteria Peronæa poſterior.

The Tibialis Anterior having paſſed between the heads of the Tibia and Fibula, ſends ſmall branches upward and laterally. The ſuperior branches communicate with thoſe rami of the Popliteus which lie round the articulation; and the lateral branches go to the neighbouring parts. Afterwards this Tibial Artery runs down on the foreſide of the interoſſeous ligament, toward the outſide of the Tibia, between the Muſculus Tibialis Anticus and Extenſor Pollicis.

Having run laterally on the Tibia for about two thirds of the length of that bone, it paſſes on the foreſide under the common annular ligament, and extenſor Pollicis, to the articulation of the foot; giving off ſeveral rami both to the right and left hand, which communicate laterally with the Tibialis poſterior and Peronæa poſterior, ſo that theſe two bones are in a manner ſurrounded by arteries.

At the joints of the foot, it ſends out branches which run between the Aſtralagus and Os Calcis, being diſtributed to the articulation and to the bones of the Tarſus. The communications are here very numerous on all ſides.

Having paſſed the fold of the foot, it ſends off toward both ſides, other rami, which communicate with the poſterior Tibialis and Peronæa; all theſe branches making a kind of circles round the Tarſus.

Afterwards the anterior Tibial Artery advances on the convex ſide of the foot, as far as the interſtice between the firſt and ſecond metatarſal bones; between the heads of which, it ſends a large branch, which perforates the ſuperior interoſſeous muſcles, and joining the Tibialis poſterior, forms an arch on the ſide of the foot.

It likewiſe ſends two or three conſiderable branches over the other metatarſal bones, which go to the reſt of the interoſſeous muſcles, integuments, &c. and communicate with each other.

Laſtly, this artery terminates by two principal branches, one of which goes to the Thenar, and inſide of the great toe; the other is ſpent upon the outſide of the great toe, and the inſide of the ſecond toe.

The Tibialis poſterior, called likewiſe Suralis, runs down between the Solei, Tibialis Poſticus, Flexor Digitorum communis, and Flexor Pollicis; giving branches to theſe muſcles, to the Tibia, and to the marrow of that bone, through a particular canal in its poſterior and upper part.

Afterwards it runs behind the inner ankle, communicating with the Tibialis anterior, and ſurrounded by the neighbouring veins; and paſſes to the ſole of the foot between the concave ſide of the Os Calcis and Thenar muſcle, where it divides into two branches, one large or external, the other ſmall or internal.

The great branch, or Arteria Plantaris externa, paſſes on the concave ſide of the Os Calcis obliquely under the ſole of the foot, to the baſis of the fiſth metatarſal bone, and from thence runs in a kind of arch toward the great toe, communicating there with the Tibialis anterior, which perforates the interoſſeous muſcles in the manner already ſaid.

The convex ſide of this arch ſupplies both ſides of the laſt three toes, and the outſide of the ſecond toe, forming ſmall communicating arches at the end, and ſometimes at the middle of each toe, as in the hand. The concave ſide of the arch furniſhes the neighbouring parts.

The ſmall branch, or Arteria Plantaris interna, having reached beyond the middle of the ſole of the foot is divided into two; one of which goes to the great toe, communicating with the ramus of the Tibialis Anterior; the other is diſtributed to the firſt Phalanges of the other toes, communicating with the ramifications from the arch already mentioned.

The Arteria Peronæa runs down on the backſide of the Fibula, between the Soleus and Flexor Pollicis, to which and to the neighbouring parts, it gives rami in its paſſage.

Having reached to the lower third part of the Fibula, it ſends off a conſiderable branch, which runs in between the Tibia and that bone, paſſing between their extremities from behind forward, below the interoſſeous ligament, and is diſtributed to the integuments of the Tarſus.

Laſtly, the Peronæa continuing its courſe downward, on the back ſide of the Fibula, as far as the Os Calcis, forms an arch with the Tibialis poſterior, between the Aſtralagus and the Tendo Achillis.

From thence it runs outward, and a little above the outer ankle communicates with the Tibialis anterior by an arch, which ſends ſeveral ſmall ramifications to the neighbouring parts.

In this deſcription of the Arteries, nothing is ſaid of the Cutaneous Anaſtomoſes, which are exceedingly beautiful in the Fœtus; nor of the frequent and conſiderable communications of ſmall Arteries upon the Perioſteum, which forms a delicate kind of net-work, or Rete Mirabile.

# Of the VEINS.

THE blood diſtributed to all parts of the body by two great Arteries, the Aorta and Arteria Pulmonaris, returns by three large Veins, called by anatomiſts Vena Cava, Vena Portæ, and Vena Pulmonaris.

The Vena Cava carries back to the right Auricle of the heart, the blood conveyed by the Aorta to all the parts of the body, except what goes by the Arteriæ Coronariæ Cordis. It receives all this blood from the arterial ramifications in part directly, and in part indirectly.

The Vena Portæ receives the blood carried to the floating Viſcera of the Abdomen by the Arteria Celiaca, and the two Meſentericæ, and conveys it to the Vena Hepatica, and from thence to the Vena Cava.

The Vena Pulmonaris conveys to the Pulmonary Sinus, or left Auricle of the heart, the blood carried to the Lungs by the Arteria Pulmonaris.

To theſe three veins two others might be added, *viz.* thoſe which belong particularly to the heart and to its Auricles, and the Sinuſes of the Dura Mater.

In deſcribing the general courſe of the veins, we may either begin by their extremities in all the parts of the body, and end by the trunks carried all the way to the heart, according to the courſe of the blood; or we may begin by the great trunks, and end by the ramifications and capillary extremities, according to their ſeveral diviſions and ſubdiviſions.

This laſt method is moſt convenient, and makes it a very eaſy matter to purſue the firſt, whenever we think it proper to do it; we ſhall therefore follow it in this deſcription.

## General Diviſion of the VENA CAVA.

We commonly talk of the Vena Cava in general, as if it were but one vein at its origin, or had but one common trunk; whereas it goes out from the right Auricle of the heart by two large ſeparate trunks, in a direction almoſt perpendicularly oppoſite to each other, one running upward called Vena Cava ſuperior, the other downward called Vena Cava inferior.

It may however be ſaid, that theſe two veins have a ſort of continuity, or a ſmall portion of a common trunk, fixed to the edges of the right Auricle; as if three quarters of the circumference of a large ſtraight tube were cut off, and the edges of a ſmall bladder applied to the edges of the opening thus made in the tube.

The right Auricle may alſo be look'd upon as a muſcular trunk common to theſe two large veins, and may be called the Sinus of the Vena Cava; but in this reſpect, the name of Sinus Pulmonaris agrees ſtill better to the left Auricle.

The Vena Cava ſuperior is diſtributed chiefly to the Thorax, head, and upper extremities, and but very little to the parts below the Diaphragm.

The Vena Cava inferior is diſtributed chiefly to the Abdomen and lower extremities, and but very little to the parts above the Diaphragm.

The ancients called the ſuperior Vena Cava, Aſcendens, and the inferior, Deſcendens, having regard only to the great Tubes, and to their diviſion into trunks and branches. Several moderns have retained theſe names, but in a contrary ſignification, to accommodate them to the motion of the blood, which deſcends by the Cava ſuperior, and aſcends by the Cava inferior.

But to ſhun the miſtakes that may happen in reports made of wounds or other diſeaſes, and of what is obſerved in opening dead bodies, and in other caſes of theſe kinds, it is beſt to retain the diſtinction of Vena Cava ſuperior and inferior.

The trunk of each of theſe two veins ſends off, much in the ſame manner with the arteries, a certain number of principal or capital branches, which are afterward ramified in different manners. Each trunk terminates afterwards by a bifurcation or a diviſion into two ſubordinate trunks, each of which gives off other principal branches, ending in a great number of ſmall trunks, rami and ramifications.

They have likewiſe this common to them with the arteries, that the greateſt part of the capital branches are in pairs, as well as the ſubordinate trunks. The ramifications of each ſubordinate trunk taken by itſelf, are in uneven numbers, but they make even numbers with thoſe of the other like trunk. The Vena Azygos and ſome other ſmall veins, of which hereafter, are exceptions from this rule.

Before we go on to the particular deſcription of each of theſe veins, many of which have proper names, it will be neceſſary to give a general idea of their diſtribution, and an enumeration of their principal ramifications in the ſame manner as was done in the deſcription of the arteries, and for the ſame reaſon.

## Vena Cava Superior.

The ſuperior Vena Cava runs up from the right auricle of the heart, almoſt in a direct courſe, for about two fingers breadth, lying within the Pericardium, in the right ſide of the trunk of the Aorta, but a little more anteriorly.

As it goes out of the Pericardium, it is inclined a little to the left hand, and then runs up about an inch, that is, as high as the Cartilage of the firſt true rib, and little higher than the curvature of the Aorta. At this place it terminates by a biſurcation or diviſion into two large branches or ſubordinate trunks, one of which runs toward the left hand, the other toward the right.

Theſe two branches are named Subclaviæ, as lying behind, and in ſome meaſure, under the Claviculæ, both in the ſame manner. They are of unequal lengths, becauſe the trunk of the Vena Cava does not lie in the middle of the Thorax, but toward the right ſide where the left Subclavian ariſes as well as the right, and is conſequently longeſt.

The trunk of the ſuperior Cava from where it leaves the Pericardium to the biſurcation, ſends out anteriorly ſeveral ſmall branches, which ſometimes ariſe ſeparately and ſometimes by ſmall common trunks. Theſe branches are the Vena Mediaſtina, Pericardia, Diaphragmatica ſuperior, Thymica, Mammaria interna, and Trachealis, the laſt of which go out ſometimes behind the biſurcation.

All theſe ſmall branches from the trunk of the Cava ſuperior are termed Dextræ; and their fellows on the other ſide called Siniſtræ do not ariſe from the trunk, becauſe of its lateral ſituation, but from the left Subclavia.

Poſteriorly, a little above the Pericardium, the trunk of the Superior Cava ſends out a capital branch, called Vena Azygos, or Vena ſine Pari, which runs down on the right ſide of the bodies of the Vertebræ Dorſi, almoſt to the Diaphragm; giving off the greateſt part of the Venæ Intercoſtales and Lumbares ſuperiores.

The two Subclaviæ run laterally or toward each ſide, and terminate as they go out of the Thorax, between the firſt rib and Clavicula, immediately before the anterior inſertion of the Muſculus ſcalenus.

The right Subclavian, which is the ſhorteſt of the two, commonly ſends out four capital branches; the Jugularis externa, Jugularis interna, Vertebralis and Axillaris, which laſt is rather a continuation than a branch of the Subclavia.

The left Subclavian being longer than the right, for the reaſon already given, gives off firſt of all the ſmall veins on the left ſide, anſwering thoſe on the right ſide that come from the trunk of the ſuperior Cava, *viz.* the Mediaſtina, Pericardia, Diaphragmatica ſuperior, Thymica, Mammaria interna, and Trachealis.

Next to theſe ſmall veins, called Siniſtræ, it detaches another ſmall branch, called Intercoſtalis ſuperior Siniſtra, and then four large branches like thoſe from the right Subclavian, *viz.* the Jugularis externa, Jugularis interna, Vertebralis and Axillaris, which are all termed Siniſtræ.

The external jugular veins, are diſtributed chiefly to the outer parts of the throat, neck and head; and ſend a ſmall vein to the arm, named Cephalica, which aſſiſts in forming a large one of the ſame name.

The internal jugular veins go to the internal parts of the neck and head, communicating with the Sinuſes of the Dura Mater, and in ſeveral places, with the external jugular veins.

The vertebral veins paſs through the holes in the tranſverſe Apophyſes of the Vertebræ of the neck, ſending branches to the neck and Occiput. They form the Sinus Venales of theſe Vertebræ, and communicate with the Sinuſes of the Dura Mater.

The Axillary Veins are continuations of the Subclaviæ, from whence theſe leave the Thorax to the Axillæ. They produce the Mammariæ internæ, Thoracicæ Scapulares or Humerales, and a branch to each arm, which, together with that from the external Jugularis, forms the Vena Cephalica.

Afterwards the Axillary Vein terminates in the principal vein of the arm, called Baſilica; which, together with the Cephalica, is diſtributed by numerous ramifications to all the parts of the arm, fore-arm and hand.

### VENA CAVA, Inferior.

The portion of the inferior Vena Cava, contained in the Pericardium is very ſmall, being ſcarcely the twelfth part of an inch on the fore part, and not above a quarter of an inch on the back part. From thence it immediately perforates the Diaphragm, to which it gives the Venæ Diaphragmaticæ inferiores or Phrenicæ

It paſſes next behind the liver through the great Sinus of that Viſcus, to which it furniſhes ſeveral branches, termed Venæ Hepaticæ.

In this courſe it inclines a little toward the Spina Dorſi and Aorta inferior, the trunk and ramifications of which it afterwards accompanies in the Abdomen, all the way to the Os Sacrum; the Arteria Cæliaca and the two Meſentericæ only excepted.

Thus the inferior Cava ſends out on each ſide, in the ſame manner with the Aorta, the Venæ Adipoſæ, Renales, Spermaticæ, Lumbares, and Sacræ. Having reached to the Os Sacrum, it loſes the name of Cava, and terminating by a bifurcation, like that of the deſcending Aorta, it forms the two Venæ Iliacæ.

Theſe Iliac Veins having given off the Hypogaſtricæ with all their ramifications, to the Viſcera of the Pelvis and to ſome other external and internal neighbouring parts, go out of the Abdomen, under the Ligamentum Fallopii, and there take the name of Venæ Crurales.

Each Crural Vein ſends off numerous ramifications to all the lower extremity; beſides the Vena Saphena which goes out near the origin of the Cruralis, and running along this whole extremity, detaches many ramifications, all the way to the foot, as we ſhall ſee more particularly hereafter.

## VENA AZYGOS and VENÆ INTERCOSTALES.

The Vena Azygos or ſine Pari is very conſiderable, and ariſes poſteriorly from the Superior Cava, a little above the Pericardium.

It is immediately afterwards bent backward over the origin of the right lung; forming an arch which ſurrounds the great pulmonary veſſels on that ſide, as the arch of the Aorta does thoſe of the left ſide, with this difference only, that the Curvature of the Azygos is almoſt directly backward, whereas that of the Aorta is oblique.

From thence it runs down on the right ſide of the Vertebræ Dorſi on one ſide of the Aorta, and before the Intercoſtal Arteries; and getting behind the Diaphragm, it terminates by a very ſenſible Anaſtomoſis, ſometimes with the Vena Renalis, ſometimes with a neighbouring lumbar vein, ſometimes immediately with the trunk of the Cava inferior, and ſometimes otherwiſe.

Sometimes this vein is extremely large, reſembling the trunk of the inferior Cava, from the Diaphragm to the origin of the Renales; the true Cava being through all this ſpace very narrow, or of the ſize of an ordinary Azygos.

The Vena Azygos ſends out firſt of all, two or three ſmall veins from the top of the arch, one of which goes to the Aſpera Arteria; the others partly to the Aſpera Arteria; the others partly to the Aſpera Arteria, and partly to the Bronchia, by the name of Venæ Bronchiales, accompanying the ramifications of the Bronchial Artery.

Afterwards the Azygos detaches from the extremity of the arch, a ſmall trunk common to two or three ſmall veins, called Intercoſtales ſuperiores Dextræ, which bring back the blood from the firſt three Series of the intercoſtal muſcles, and from the neighbouring part of the Pleura.

Theſe intercoſtal veins ſend branches through the intercoſtal muſcles to the Serratus ſuperior Poſticus, Serratus major, *&c.* and afterwards they run along the interſtices between the ribs, communicating with the Venæ Mammariæ.

They likewiſe ſend ſmall branches backward to the vertebral muſcles, and canal of the Spine, where they communicate with the Venal Circles or Sinuſes, which bring back the blood from the Medulla Spinalis.

As the Azygos runs down, it ſends off the inferior intercoſtal veins on the right ſide, one going to each ſeries of intercoſtal muſcles. Theſe veins run along the lower edges of the ribs, and perforate the muſcles by branches, which go to the poſterior and external part of the Thorax.

They communicate with the Venæ Thoracicæ, and moſt commonly with the Mammaria interna; and laſtly, more or leſs with each other, by perpendicular branches, near the poſterior extremities of the ribs.

The Azygos ſends off likewiſe the left intercoſtal veins, but ſeldom the whole number ; for the ſuperior veins come often from the left Subclavian, as we ſhall ſee in the hiſtory of that vein. The inferior intercoſtal veins, to the number of ſix or ſeven, ſometimes more, ſometimet fewer, come often from the trunk of the Azygos ; and running between the Aorta and Vertebræ, to the ſubſtance of which they give ſmall capillary twigs, they ſend off almoſt the ſame ramifications with the veins on the right ſide, and likewiſe ſome to the Oeſophagus.

Sometimes theſe intercoſtal veins come from a ſmall common trunk which goes out from that of the Azygos, and paſſing between the Aorta and Vertebræ is bent downward along the left ſide of the Vertebræ, in which courſe, it detaches the Intercoſtals laterally. This ſmall trunk is in ſome ſubjects bifurcated upward and downward, as it ſends off the Intercoſtals ; and in others there are two ſmall common trunks.

Laſtly, there is ſometimes an intire Azygos on the left ſide, which proceeding from the arch of the ordinary Azygos, is afterwards diſtributed in the ſame manner as the other on the right ſide ; but this diſpoſition likewiſe varies very much.

The Azygos having reached below the laſt rib, ſends off a large branch, which bending outward, perforates the muſcles of the Abdomen, is ramified between their different planes, and communicates with the like ramifications of the laſt, or laſt two intercoſtal veins.

Sometimes it ſends off the Vena Diaphragmatica inferior, and likewiſe gives downward to the firſt, or firſt two tranſverſe Apophyſes of the Vertebræ Lumbares, a branch which forms the firſt Venæ Lumbares Dextræ.

Theſe communications between the laſt intercoſtal, and firſt lumbar veins are very irregular, being ſometimes by a ſeries of oppoſite angles, ſometimes by Areolæ, ſometimes by a reticular texture, *&c.* Sometimes the extremity of the Vena Azygos communicates either mediately or immediately with the Vena Adipoſa, and even with the Vena Spermatica.

### VENÆ PECTORALES Internæ.

The Pectorales internæ, are ſmall veins diſpoſed in pairs toward the right and left hand, behind the Sternum and parts near it, including the Diaphragmaticæ ſuperiores, or Pericardio-Diaphragmaticæ, Mediaſtinæ, Mammariæ internæ, Thymicæ, Pericardiæ, and Gutturales or Tracheales.

All theſe ſmall veins are divided into right and left; and theſe are both diſtributed much in the ſame manner; but they differ in their origins, becauſe of the inequality in the bifurcation of the Cava ſuperior.

The right Vena Mediaſtina goes out anteriorly from the trunk of the ſuperior Cava, a little above the origin of the Azygos; the left comes from the Subclavia.

The right ſuperior Diaphragmatica or Pericardio-Diaphragmatica comes anteriorly from the root of the bifurcation near the Mediaſtina; and is diſtributed by ſeveral branches to the upper, fore and back parts of the Pericardium, communicating with thoſe of the left Diaphragmatica, and accompanying the nerve of the ſame name. The left ſuperior Diaphragmatica comes from the left Subclavian, a little below the origin of the Mammaria.

The right internal Mammaria ariſes anteriorly from the Vena Cava, a little below the angle of the bifurcation. It runs along the neareſt internal or poſterior edge of the Sternum, and on the cartilaginous extremities of the right ribs, together with the artery of the ſame name. Having reached near the Diaphragm, it ſends it a branch which runs toward the tendinous plane, and communicates with the common diaphragmatic veins.

Afterwards this mammary vein gives ſmall branches to the Mediaſtinum, and others between the ribs to the Integuments; of which thoſe that paſs between and under the cartilages of the laſt true ribs, run down on the inner or poſterior ſide of the Muſculi Recti Abdominis, being ramified among their fleſhy fibres, and communicating really with the Epigaſtric veins by ſeveral ſmall twigs.

The left internal Mammaria ariſes anteriorly from the left Subclavian, oppoſite to the cartilage or anterior extremity of the firſt true rib.

The right Vena Thymica, when it ariſes ſeparately, goes out from the biſurcation; and when it is wanting, the Thymus from whence it takes its name, is furniſhed by the Gutturalis or ſome other neighbouring vein. This vein often reaches no lower than the inferior part of the Thymus; and the left vein of the ſame name comes from the left Subclavia, almoſt oppoſite to the Sternum.

The right Pericardia ſeems to go out rather from the origin of the right Subclavian than from the trunk of the ſuperior Cava; but in this there are many varieties. It goes to the upper ſide of the Pericardium, and other neighbouring parts. The left Pericardia comes ſometimes from the left Subclavian, before the Mammaria, and ſometimes from the Mammaria or Diaphragmatica ſuperior on the ſame ſide.

The right Gutturalis or Trachealis goes out from the upper part of the biſurcation, above the Mammaria of the ſame ſide, ſometimes more backward, and ſometimes from the Subclavia. It is diſtributed to the Glandulæ Thyroidææ, Trachea Arteria, Muſculi Sterno-Hyoidæi, Thymus and Glandulæ Bronchiales. It communicates by lateral branches more or leſs contorted, with the internal jugular vein, and ſometimes by another branch, with a ſmall vein, which the internal jugular ſends to the Glandula Thyroides. The left Gutturalis comes from the upper or poſterior part of the left Subclavian near its origin.

The ſmalleſt internal pectoral veins do not always ariſe ſeparately, but have ſometimes a ſmall common trunk, eſpecially on the right ſide; and of all theſe ſmall veins, the Mammaria interna is the moſt conſiderable.

### VENÆ SUBCLAVIÆ.

The right Subclavian Vein, as has been already ſaid, is very ſhort, and its courſe very oblique, ſo that it appears to riſe higher than the left vein. It ſends off firſt of all, four large branches already mentioned, *viz.* the Vertebralis, which is the firſt and moſt poſterior; Jugularis interna, Jugularis externa and Axillaris.

The left Subclavian ſeems to aſcend but very little, after the bifurcation, becauſe it runs further and more tranſverſely than the right; and in this courſe it covers the origin of three large arteries, which come from the curvature of the Aorta. It ſends off four large branches beſides the ſmall pectoral veins, and receives the Ductus Thoracicus.

It likewiſe gives off, before its principal diviſion, a ſmall trunk for the left ſuperior Intercoſtals, which are ſometimes ſix in number, and communicate with the inferior Intercoſtals, and with a branch of the Vena Azygos. This ſmall common intercoſtal trunk furniſhes likewiſe the left Bronchialis.

Each Subclavian Vein near the middle of the Clavicula, ſends off a branch called Cephalica, which deſcends near the ſurface of the body, between the Deltoides and Pectoralis major, and reaches the arm in the manner which ſhall be related hereafter.

### Venæ Jugulares Externæ.

Each external jugular Vein ariſes from the Subclavian on the ſame ſide, ſometimes from the Axillaris, and ſometimes from the union of theſe two veins. The right and left do not always ariſe in the ſame manner; for ſometimes the right comes from the Subclavian, and the left from the internal Jugular on the ſame ſide. They run up between the Muſculus Cutaneus and Sterno-Maſtoidæus, being covered by the former, and croſſing over the latter.

Sometimes they are double from their very origins; and when they are ſingle, each of them divides afterwards into two, one anterior, and the other poſterior or rather ſuperior. The anterior vein goes to the throat and face, running up toward the angle of the lower jaw, and the poſterior goes to the temples and Occiput.

### Vena Jugularis Externa Anterior.

The anterior external jugular Vein is often a branch of the Jugularis interna, and ſometimes ariſes from the communications of the two Jugulares in ſuch a manner as that it cannot be ſaid to belong more to the one than to the other. Sometimes, but very rarely, it comes from the Vena Axillaris.

It runs up toward the lateral part of the lower jaw, between the angle and the chin, like a Vena Maxillaris, and ſends ſeveral branches forwards, backwards and inwards.

Poſteriorly it gives, (1) a large branch on the ſide of the upper part of the Larynx, which communicates with the Jugularis interna; and likewiſe with a large ſhort branch of the Jugularis externa poſterior, of which below. (2) A ſmall branch which has the ſame communication, but which is not always to be found. (3) Another ſmall branch a little below the lower jaw, which communicates with the Jugularis externa poſterior.

Anteriorly it ſends ſeveral branches to the muſcles of the Larynx, Sterno-Hyoidæi, Thyro Hyoidæi and to the Integuments; and below the Larynx it ſends communicating branches to the Jugularis externa anterior of the other ſide.

A little higher, oppoſite to the Cartilago Thyroides, it gives off a tranſverſe branch, which runs on the anterior and lower part of the Muſculi Sterno-Maſtoidæi, and communicates with the Jugularis of the other ſide, tho' not always by a vein of the ſame kind.

The ſuperior and inferior tranſverſe branches communicate on each ſide by branches more or leſs perpendicular, and ſend a ſmall branch to the Muſculus Quadratus of the chin, to the Muſculus Cutaneus and Integuments.

It ſends another large branch anteriorly toward the Symphyſis of the lower jaw, which after having ſupplied the maxillary Glands, is diſtributed to the digaſtric muſcle, to the chin and under lip.

Interiorly at the ſame place it ſends out a large branch, which furniſhes the Glandulæ Sublinguales, runs down toward the Cornua of the Os Hyoides, to communicate with ſome branches of the Jugularis interna, and ſends ſeveral rami to the tongue, called Venæ Raninæ. It gives off likewiſe a ſmall branch, which running upon the Muſculus Labiorum Triangularis, to the commiſſure of the lips, is diſtributed to the neighbouring parts.

The ſame branch which gives out the Venæ Raninæ, detaches another to the lateral parts of the Septum Palati, which is diſtributed to the Amygdalæ, and to the Uvula, and ſends rami forward to the membrane, which lines the arch of the palate. Another branch goes out from it to the Pterygoidæus internus, Periſtaphylini and Cephalo-Pharyngæi.

Afterwards the trunk of the anterior external jugular vein runs up on the Muſculus Triangularis, where it receives the name of Vena Triangularis, in a winding courſe from the angle of the lower jaw to the great or internal angle of the Orbit, ſending branches on each ſide to the muſcles and integuments.

Theſe branches communicate with each other, eſpecially one which paſſes under the Zygoma, behind the Os Malæ, to the inferior Orbitary or Spheno-maxillary fiſſure, and another ſmall branch, which runs along the inferior portion of the Orbitary Muſcle, to the ſmall or external angle of the eye, where it communicates with the rami Temporales and Frontales.

It is here to be obſerved that under the angle of the lower jaw, there is a great variety of communications between the external and internal jugular veins, and alſo a great variety in the diſtribution of theſe veins.

Almoſt all the ramifications, which at this place go from the external jugular vein, to be diſtributed on the upper part of the throat and on the face in ſome ſubjects, ariſe n other ſubjects from the internal Jugular; and ſometimes, one part of them comes from the external Jugular, the reſt from the internal.

The trunk of the Vena Angularis having reached the bones of the noſe, ſends out a branch through the lateral cartilages of the noſe, which is diſtributed to the Nares; and another which runs down in a winding courſe to the upper lip.

At the great or inner angle of the eye, the ſame trunk ſends off ſeveral other branches; the firſt of which goes to the root of the noſe, and communicates with its fellow from the other ſide, gives ſeveral ſmall veins to the holes of the Oſſa Naſi.

The ſecond branch runs up on the fore-head, by the name of Vena Frontalis, antiently Præparata; and is diſtributed to each ſide, communicating with its fellow, when any ſuch vein is found.

The third branch enters the Orbit in a winding courſe, one on each ſide of the cartilaginous pully, and communicates with the Sinuſes of the Dura Mater, by the orbitary Sinus of the eye.

The fourth branch goes along the Muſculus Superciliaris and the upper part of the Orbicularis, to the ſmall or external angle of the Eye, to communicate with the Vena Temporalis and with that vein which runs along the lower part of the orbicular muſcle, with which it forms a kind of circle.

### VENA JUGULARIS externa poſterior, ſive ſuperior.

The poſterior or ſuperior external jugular Vein runs up toward the parotid gland, and lower anterior part of the eye, giving out ſeveral conſiderable branches toward each ſide.

At its origin it ſends out poſteriorly, a principal branch with its ramifications, to the muſcles which cover the Scapula, and joint of the Humerus, commonly called Vena Muſcularis, and which might be named Super-Humeralis.

A little higher, it gives off the Vena Cervicalis which goes to the vertebral muſcles of the neck. This vein communicates with the Humeralis by the ſeveral Areolæ, or venal maſſes, and they are both ramified in different manners.

Theſe ramifications and communications are in part covered by the Muſculus Trapezius, and communicate likewiſe with ſome branches of the Vena Occipitalis, and with a branch of the ſuperior intercoſtal vein, which perforates the firſt intercoſtal muſcle.

Near the cervical vein, but a little more outward, it gives off ſometimes the ſmall Vena Cephalica, which runs down between the Pectoralis major, and Deltoides, as was already ſaid, and unites with the Vena Cephalica of the arm, which ſhall be deſcribed hereafter.

Backward it detaches the Vena Occipitalis, which is diſtributed on the Occiput, and ſometimes comes from the Vena Vertebralis or Axillaris, &c. It likewiſe ſends out a ſmall vein, which enters the Cranium by the poſterior Maſtoide hole, and terminates in one of the lateral Sinuſes of the Dura Mater. This branch comes ſometimes from another vein.

Having reached as far as the Parotid Gland, it forms communications with the anterior external Jugular, under the angle of the lower jaw; and then paſſes through the Parotid Gland, between that angle and the Condyle, giving off a large branch which communicates with another branch common to the internal and anterior external Jugulars.

Sometimes there are ſeveral branches, which having run a very little way, unite together and repreſent the ſhort large branch, forming Areolæ or Maſſes through which the nerves paſs.

Afterwards it paſſes before the ear, taking the name of Vena Temporalis, which is diſtributed to the temples and lateral parts of the head, towards the Occiput and forehead. Sometimes the temporal Vein has two origins, whereof one is from the Jugularis interna.

The temporal Vein of one ſide communicates above, with its fellow on the other ſide; before, with the Vena Frontalis, and behind, with the Vena Occipitalis. Oppoſite to the ear, it gives out a large branch, one ramus of which runs under the lower edge of the Zygoma, and then returning, communicates with another ramus from the ſame Jugularis, a little below the Condyle of the lower jaw, forming a kind of iſland irregularly round.

Behind this Condyle, it gives branches to the Temporal Muſcle, to the neighbouring parts of the upper jaw, and to the inſide of the lower jaw, almoſt in the ſame manner as is done by the arteries.

Only one of theſe branches runs from without inward, between the Condyloide and Coronoide Apophyſes, to be diſtributed to the Muſculus Temporalis and Pterygoidæi; ſending off a ramus to the Maſſeter, in its paſſage.

### Vena Jugularis Interna.

The internal jugular Vein, is the largeſt of all thoſe that go to the head; tho' not ſo large as it ſeems to be, when injected.

It runs up behind the Sterno-Maſtoidæus and Omo-Hyoidæus which it croſſes; along the ſides of the Vertebræ of the neck, by the edge of the Longus Colli, to the Foſſula of the Foramen Lacerum of the Baſis Cranii.

The firſt branches which it ſends off are ſmall and go to the Thyroide Glands. About two fingers breadth higher up, it detaches a middle-ſized branch which runs laterally toward the Larynx, and may be named Vena Gutturalis.

This Guttural Vein divides chiefly into three branches; the loweſt of which goes to the Thyroide Gland and neighbouring muſcles; the middle branch to the Larynx, Muſculi Thyroidæi, *&c.* and the third runs upward to the great communication between the two Jugulares already mentioned. In this, however, there is ſome variety, and I have ſeen the left Guttural Vein go out from the Axillaris.

About the ſame diſtance upward, almoſt oppoſite to the Os Hyoides, the internal Jugular gives another branch, which ſends rami to the muſcles belonging to that bone, and others which communicate with the foregoing branch. This other branch runs upward toward the parotid gland and angle of the lower jaw, where it ſends communicating branches forward and backward to the two external Jugulares.

It is at this place likewiſe that the internal Jugular ſometimes produces the Vena Maxillaris interna and all its ramifications, as has been already ſaid in the deſcription of the Jugularis anterior externa.

The internal Jugular ſends another branch backward, which is diſtributed to the Occiput, where it communicates with a branch of the Vertebralis; and through the poſterior Maſtoide hole, with the lateral Sinus of the Dura Mater. This communication is ſometimes by an anaſtomoſis with a branch of the external jugular, or of the Cervicalis which goes thither.

Afterwards it reaches the Foramen Lacerum of the Baſis Cranii, bending a little, and ſending off ſmall twigs to the Pharynx and neighbouring muſcles.

### Vena Vertebralis.

The Vertebral Vein ariſes poſteriorly from the Subclavia or Axillaris, ſometimes by two ſtems, ſometimes by one, which ſoon afterwards divides into two.

The firſt and principal ſtem gives out a branch called Vena Cervicalis, which is diſtributed to the neighbouring muſcles, and afterwards runs up through the holes of the tranſverſe apophyſes of the Vertebræ Colli. This cervical branch comes ſometimes from the Axillaris.

The other ſtem of the Vertebral Vein runs up on the ſide of the Vertebræ and having reached the fourth, are ſometimes higher, it runs in between the tranſverſe apophyſes of that Vertebra and of the fifth, to join the firſt or principal ſtem.

Thus the Vertebral Vein accompanies the artery of the ſame name, ſometimes in one trunk, ſometimes in ſeveral ſtems, through all the holes of the tranſverſe apophyſes of the Vertebræ Colli, all the way to the great Foramen Occipitale, communicating with the occipital veins and ſmall occipital ſinuſes of the Dura Mater.

In its paſſage it gives off one branch which enters by the poſterior Condyloide hole of the Os Occipitis, and communicates with the lateral ſinus of the Dura Mater; but it is not always to be met with.

As theſe veins run through the holes in the tranſverſe apophyſes, they ſend branches forward to the anterior muſcles of the neck, and to the ſmall interior muſcles of the head.

Other branches go likewiſe outward and backward to the muſculi tranſverſales and vertebrales Colli; and inward to the great canal of the ſpinal marrow, where they form ſinuſes, which communicate with thoſe on the other ſide.

Theſe vertebral ſinuſes are pretty numerous, and placed one above another all the way to the Occiput; the lower communicate with the upper; and at the great Foramen of the Os Occipitis, there is a communication between them and the occipital ſinuſes of the Dura Mater.

### VENA AXILLARIS.

The Subclavian Vein having ſent off the branches already deſcribed, goes out of the Thorax, and paſſes before the anterior portion of the Muſculus Scalenus, and between the firſt rib and the clavicle, to the Axilla. Through this courſe it takes the name of Vena Axillaris, and gives off ſeveral branches, the chief of which are the Venæ Muſculares, Thoracicæ and Vena Cephalica, which is ſometimes double.

The firſt veins which it ſends off are the Muſculares diſtributed to the middle portion of the Muſculus Trapezius, to the Angularis, Infra-Spinatus and Subſcapularis; and as ſome of theſe branches go to the ſhoulder exteriorly, others interiorly; the Venæ Scapulares are diſtinguiſhed into external and internal.

A little before the Axillaris reaches the Axilla, it ſends out the Venæ Thoracicæ, one of which is ſuperior, called alſo, Mammaria Externa, and the other Inferior. It likewiſe ſends rami to the Muſculus Subſcapularis, Teres Major, Teres Minor, Supra-Spinatus, Latiſſimus Dorſi, Serratus Major, Pectoralis Minor, Pectoralis Major, and to the glands of the Axilla; and ſometimes gives a communicating branch to the Vena Baſilica.

The Axillaris having reached the ſide of the head of the Os Humeri, produces a very conſiderable branch named Vena Cephalica, and afterwards runs along the arm by the name of Vena Baſilica; which however appears ſometimes to be rather a branch, than a continuation of the trunk of the Axillaris; in which caſe the Cephalica and Baſilica might be looked upon as two principal branches of the Axillaiy vein.

### VENA CEPHALICA.

The Cephalic vein which is a branch of the Axillaris, at a ſmall diſtance from its origin, joins the ſmall Cephalica which runs down from the Subclavia, or Jugularis externa; having till then run near the ſurface of the body between the Deltoides and Pectoralis Major, and ſometimes theſe two veins communicate before their union.

The great Cephalica runs down between the tendons of the laſt mentioned muſcles, and along the outer edge of the external portion of the Biceps; communicating ſeveral times with the Vena Baſilica, and ſending ſmall rami on each ſide, to the neighbouring muſcles, fat and ſkin. Some branches go out from its upper part, which, lower down, unite again with the trunk.

A little below the external Condyle of the Os Humeri, it detaches a branch backward, which runs up between the Muſculus Brachialis and the upper portion of the Supinator Longus, and afterwards bends back between the Os Humeri and Anconæus Externus, where it communicates with ſome branches of the Baſilica.

Having reached very near the fold of the arm, it is divided into two principal branches, one long, the other ſhort. The long branch is named Radialis externa, and the ſhort one may be called Mediana, Cephalica, to deſtinguiſh it from another Mediana. which is a ſhort branch of the Baſilica; and therefore ought to be called Vena Mediana Baſilica.

The external Radial Vein runs along the Radius between the muſcles and integuments, giving off branches toward both ſides, which communicate with other branches of the ſame vein, and with ſome from the Baſilica, forming Areolæ much in the ſame manner as the Saphena does in the lower extremity.

The Mediana Cephalica runs down obliquely toward the middle of the fold of the arm, under the integuments, and over the tendon of the Biceps where it joins a ſhort branch of the ſame kind from the Baſiliac, which I have already named Mediana Baſilica. Theſe two Medianæ unite in an angle, the apex of which is turned downward.

From this angular union, or Anaſtomoſis, a conſiderable branch goes out, which runs down on the fore-arm, uniting on one ſide with the Vena Cephalica, and communicating on the other with the Baſilica, by ſeveral irregular Areolæ. The name of Mediana is given to this large branch, as well as to the two ſhort ones, by the union of which it is formed; but that they may not be confounded, this large branch may be termed Mediana Major or Media. the names already given to the other two being retained.

From this union of the two lateral Medianæ, and ſometimes from the origin of the Mediana Media, which is the true Mediana of *Riolan*, a branch goes out which runs down on the inſide of the fore-arm, oppoſite to the interoſſeous ligament, and is called Vena Cubiti Profunda. It goes to the neighbouring muſcles, and communicates with the other veins of the fore-arm. The Mediana Cephalica ſometimes ſends down a long branch, called Radialis interna, which lies almoſt parallel to the Radialis externa already mentioned.

Afterwards the Cephalica having reached the extremity of the Radius, is diſtributed by numerous Areolæ, almoſt in the ſame courſe with the Radial Artery.

A particular branch goes out from it, which runs more or leſs ſuperficially between the thumb and Metacarpus, by the name of Cephalica Pollicis. The Areolæ furniſh the interoſſeous muſcles and integuments, and communicate with a ſmall ramus from the Baſilica, called by the ancients Salvatella.

## VENA BASILICA.

The ancients termed the Baſilic Vein of the right arm, the vein of the Liver, or Vena Hepatica Brachii; and that of the left arm, the vein of the Spleen, or Vena Splenica Brachii. It has ſometimes a double origin, by a branch of communication with the trunk of the Axillaris.

It ſends off firſt of all, under the head of the Os Humeri, a pretty large branch, which paſſes almoſt tranſverſely round the neck of that bone, from within, backward, and from behind, outward, running up on the Scapula, where it is ramified on the Deltoides, and communicates with the Venæ Scapulares externæ. This branch may be named Vena Sub-humeralis or Articularis, as the Artery which lies in the ſame place; they both having much the ſame courſe.

This Articular Vein ſends down two principal branches, one of which runs along the inſide of the bone, to which, and to the Perioſteum, it gives ſmall veins. The other turns forward, toward the middle of the arm between the bone and the Biceps, and communicates with the Cephalica.

Below the neck of the Os Humeri, near the hollow of the Axilla, and behind the tendon of the Pectoralis Major, the Baſilica ſends out a conſiderable branch, which runs down on the ſide of the Brachial Artery, and furniſhes the neighbouring muſcles on both ſides. This vein is named Profunda Brachii, or Profunda ſuperior.

Immediately afterwards, the Baſilica detaches two or three ſmall veins, which run down very cloſely joined to the Brachial Artery, ſurrounding it at different diſtances by ſmall twigs, which communicate with each other. Theſe veins might be named Venæ Satellites Arteriæ Brachialis.

Theſe ſmall veins which often ariſe from the Profunda ſuperior, communicate with the Baſilica and Cephalica; and having reached the fold of the arm, they divide like the artery, and the ſame diviſions are continued along the whole fore-arm, through all which ſpace they accompany and ſurround the arterial branches, in the manner already ſaid.

Afterwards the Baſilica continues its courſe along the inſide of the Os Humeri, between the muſcles and integuments, forming many communications with the Vena Profunda, Satellites and Cephalica, and ſupplying the muſcles and integuments.

Having reached the inner condyle, and having ſent off obliquely in the fold of the arm, the Mediana Baſilica, it runs along the Ulna, between the integuments and muſcles, a little towards the outſide, by the name of Cubitalis externa, ſtill communicating with the Profunda, Satellites and Cephalica.

Having detached the Mediana Baſilica, it ſends out another branch, which runs down along the inſide of the fore-arm near the Ulna, and communicates with the Mediana major, &c. This branch may be named Cubitalis interna.

The Baſilica having at length reached the extremity of the Ulna, ſends ſeveral branches to the convex ſide of the Carpus; one of which, named Salvatella, goes to that ſide of the little finger next the ring finger, having firſt communicated with the Cephalica, by means of the Venal Areolæ conſpicuous on the back of the hand. In the other fingers this vein follows nearly the ſame courſe with the artery.

In general, the external or ſuperficial veins of the forearm are larger than the internal; but they are accompanied only by ſmaller arteries; whereas the deep veins accompany large arteries.

### VENA CAVA Inferior.

The inferior Vena Cava having run down about a quarter of an inch from the right Auricle of the heart, within the Pericardium, as has been already ſaid, pierces that membrane, and the tendinous portion of the Diaphragm, which adhere very cloſely to each other.

At this place it gives off the Venæ Diaphragmaticæ or Phrenicæ, which are diſtributed to the Diaphragm, and appear chiefly on its lower ſide, one towards the right hand, and one toward the left. The right vein is more backward and lower than the left. The left is diſtributed partly to the Pericardium, and partly to the Diaphragm; and ſometimes they ſend rami to the Capſulæ Renales, much in the ſame manner as the Arteriæ Phrenicæ.

The inferior Cava having perforated the Diaphragm, paſſes through the poſterior part of the great fiſſure of the liver, penetrating a little into the ſubſtance of that viſcus, between the great lobe and the Lobulus Spigelii, being however covered but very little on the back ſide by the ſubſtance of the liver, till it reaches the Lobulus.

In its paſſage, it ſends off commonly three large branches, called Venæ Hepaticæ, which are ramified in the liver. Sometimes there are only two, and ſometimes four.

Beſides theſe large branches, it ſends out ſome other ſmall ones, either before or immediately after it goes out of the liver; which, according to ſome Anatomiſts, anſwer to the branches of the Hepatic Artery, as the large branches do to thoſe of the Vena Portæ.

In the Fœtus, as the Vena Cava paſſes by the liver, it gives off the Ductus Venoſus, which communicates with the Sinus of the Vena Portæ, and in Adults is changed to a flat ligament.

After its paſſage through the liver, the Vena Cava turns from before backward, and from right to left, toward the Spina Dorſi, placing itſelf on the right ſide of the Aorta, which it accompanies from thence downward.

Having got as low as the Arteriæ Renales, it gives off the veins of the ſame name, termed formerly Venæ Emulgentes, and which are the largeſt of all the veins that go from the Cava inferior, from the liver to the bifurcation.

The right Renal vein is the ſhorteſt, and runs down a little obliquely becauſe of the ſituation of the Kidney. The left vein, which is the longeſt, croſſes on the foreſide of the trunk of the Aorta, immediately above the ſuperior Meſenteric artery; and both veins accompany the Renal Arteries.

They ſend up the Venæ Capſulares, which go to the Glandulæ Renales, and downward, the Venæ Adipoſæ, which go to the fatty covering of the Kidneys; and ordinarily the left Renal vein furniſhes the left Spermatic vein. Afterward they run to the ſinus or cavity of the kidneys, in the ſubſtance of which they are diſtributed by numerous ramifications.

A little below the Renal veins, the trunk of the Cava ſends out anteriorly toward the right ſide, the right Vena Spermatica. The left ſpermatic vein comes commonly, though not always, from the left Renalis, as has been already obſerved. Both veins accompany the ſpermatic arteries, to the parts to be mentioned hereafter.

In their paſſage they ſend ſeveral ſmall branches on each ſide, to the Peritonæum and Meſentery, where they ſeem to be joined by Anaſtomoſes with the Venæ Meſeraicæ, and conſequently with the Vena Portæ.

They ſometimes ſend a conſiderable branch over the Iliac Muſcle, which afterwards dividing into two, one ramus

mus runs up to the Membrana Adipoſa of the kidneys, the other runs down on the laſt-mentioned muſcle.

About the ſame height with the ſpermatic vein, the inferior Cava ſends off poſteriorly in ſome ſubjects, a branch which runs upward, and communicates with the Vena Azygos. Sometimes this branch goes out from one or other of the Renales, and appears to be a true continuation of the extremity of the Azygos.

The Cava ſends likewiſe off poſteriorly the Venæ Lumbares, which commonly ariſe in pairs in the ſame manner as the arteries of the ſame name go out from the Aorta. Theſe may be divided into ſuperior and inferior veins.

Their origins vary in different manners. Sometimes the Cava gives off a branch to each ſide below the firſt Vertebra of the loins, which, like a common trunk, furniſhes the lumbar veins. This branch communicates with the Azygos.

Sometimes a conſiderable branch goes out from the lower extremity of the Cava, near the bifurcation, chiefly on the right ſide; which afterwards running up between the bodies and tranſverſe apophyſes of the Vertebræ, detaches the Venæ Lumbares, and communicates with the Azygos.

Sometimes a like branch comes from the beginning of the left Vena Iliaca, and running up on that ſide in the ſame manner, produces the Lumbares. This branch likewiſe communicates with the Azygos, and with the ſuperior or deſcending Ramus Lumbaris.

The Venæ Lumbares on one ſide communicate by tranſverſe branches with thoſe of the other ſide, and likewiſe with each other by branches more or leſs longitudinal. The firſt and ſecond often go from the Azygos, and thereby they communicate with the intercoſtal veins.

The Lumbar veins ſend ſmall capillaries, in their paſſage, to the ſubſtances of the bodies of the Vertebræ; and they are diſtributed to the muſcles of the Abdomen, Quadratus Lumborum, Pſoas, Iliacus, &c. They ſend branches backward to the neighbouring vertebral muſcles, and to the canal of the Spine, and communicate with the venal ſinuſes in the ſame manner as the intercoſtals.

The inferior Cava having reached as low as the laſt Vertebra of the loins, and near the biſurcation of the Aorta, runs in behind the right Iliac Artery, and there is divided into two ſubaltern trunks, called the right and left Iliac Veins.

The extremity of the trunk of the Vena Cava paſſes in ſome ſubjects behind the origin of the right Iliac Artery; in others, it is the left Iliac Vein which paſſes there, and conſequently croſſes the right Iliac Artery. Afterward the left Iliac Vein accompanies the inſide of the left Artery, till it goes out of the Abdomen. Therefore the Iliac Veins lie on the inſides of the arteries at this place.

From this biſurcation of the Vena Cava, and often from the origin of the left Iliaca, the Vena Sacra goes out, and accompanies the artery of the ſame name in its diſtribution to the Os Sacrum, to the nerves which lie there, and to the membranes which cover both ſides of the bone.

## VENÆ ILIACÆ.

Each original Iliac Vein is divided on the ſide of the Os Sacrum, much after the ſame manner as the arteries, into two large trunks, or ſecondary Iliac Veins. This ſecond biſurcation is about a finger's breadth below that of the Iliac Arteries.

One of theſe trunks is named Vena Iliaca Externa, or Anterior; the other Interna, or Poſterior. The external vein is likewiſe named ſimply Iliaca, and the internal, Hypogaſtrica. The external vein ſeems to be the true continuation of the trunk, and the Hypogaſtrica only a branch. We here ſpeak of adult bodies, becauſe in the fœtus there is a conſiderable variation.

Theſe veins follow nearly the courſe and diſtribution of the Iliac Arteries, except that the Hypogaſtric vein does not ſend off the Vena Umbilicalis. The external Iliac Veins lie more or leſs on the inſide of the Arteries, in the manner already ſaid; but the Hypogaſtric Veins, in the bottom of the Pelvis, lie almoſt behind the Arteries on the ſame ſide.

From the common trunk of the Iliac Veins, and ſometimes from the origin of the Iliaca Externa, a particular branch goes out, which is diſtributed to the Muſculus Pſoas, Iliacus, and Quadratus Lumborum; and afterwards ſends a ramus on the fore-ſide of the laſt tranſverſe apophyſis of the loins, to communicate with the laſt lumbar vein.

The external Iliac, a little before it leaves the Abdomen, near the Ligamentum Fallopii, lying on the Pſoas and Iliac Muſcles, gives off almoſt the ſame branches with the artery of the ſame name, and follows the ſame courſe. The chief branches are theſe.

A little before it goes out of the Abdomen, it ſends off from the outſide, a ſmall branch, which runs up along the Criſta of the Os Ilium, and gives branches on each ſide, to the lateral and poſterior lower portions of the Muſculi Abdominis, to the Muſculus Iliacus, *&c.*

From the inſide, before it leaves the Abdomen, it ſends off the Vena Epigaſtrica; which having furniſhed ſome ſmall rami to the neighbouring conglobated glands, runs up along the inſide of the Muſculi Recti, on which it is ramified both ways; as alſo on the broad muſcles of the Abdomen, by other ſmall branches, which penetrate from within outwards.

Afterwards, the Vena Epigaſtrica runs upward, and joins the ramifications of the Mammaria, by an equal number, accompanying the Epigaſtric Artery. From the inſide of the Epigaſtric vein, a branch is ſometimes detached to the Muſculus Obturator internus, where it joins another ramus named Vena Obturatrix.

Before the Iliac vein gets from under the Ligamentum Fallopii, it ſends ſeveral ſmall rami to the neighbouring Lymphatic Glands; and immediately afterwards, loſing the name of Iliaca, it takes that of Cruralis.

## VENA HYPOGASTRICA.

The Hypogaſtric or internal Iliac vein, runs behind the artery of the ſame name, making the ſame kind of arch, from which the following branches go out.

From the poſterior or convex part of the arch, it gives a branch to the ſuperior lateral part of the Os Sacrum, which is diſtributed to the Muſculus Sacer or Tranſverſo-Spinalis Lumborum, and other muſcles thereabouts, and to the cavity of the bone, which it enters through the firſt great hole.

A little lower, on the ſame ſide, it ſends out another, which is diſtributed much in the ſame manner with the former, and enters the ſecond hole.

From the external lateral part of the ſame arch, a little anteriorly, it ſends out a large branch, which runs behind the great Sciatic ſinus, and is diſtributed to the Muſculi Glutæi, Pyriformis and Gemelli.

Lower down, the ſame lateral part of the Hypogaſtric vein gives out another large branch; which having run a little way, detaches ſeveral rami, and afterward reaching the Foramen Ovale of the Os Innominatum, perforates the Obturator muſcles, communicates with the Vena Cruralis, and is diſtributed to the Muſculus Pectineus, Triceps, and neighbouring parts. This vein is termed Obturatrix, from its paſſing through the muſcles of that name.

Among the branches ſent off by the Vena Obturatrix, before it perforates the muſcles, one is ſituated exteriorly, which runs toward the Sciatic ſinus, to the Muſculus Iliacus, the ſuperior part of the Obturator internus, and to the Os Ilium, near its Symphyſis with the Os Iſchium.

Interiorly, the ſame Obturator vein ſends off another branch, which is diſtributed to the Ureters, bladder, and internal parts of generation in both ſexes. It communicates with the Spermatic veins, and is more conſiderable in women than in men.

Laſtly, the Hypogaſtric Vein runs backward, and goes out of the Pelvis, above the ligament which lies between the inferior lateral part of the Os Sacrum and Spine of the Iſchium; and as it goes out, it is ramified chiefly upward and downward.

It ſends a large branch upward to the lower part of the Os Sacrum, and two or more downward; which running behind the ſame ligament are diſtributed to the buttocks, Anus, neighbouring portion of the Muſculus Pectineus, and to the external parts of generation, nearly in the ſame manner with the artery which accompanies them.

The veins that go to the Anus, are termed Hæmorrhoidales Externæ, and they that go to the parts of generation, Pudicæ Internæ. The Externæ Hemorrhoidales communicate with the internal veins of the ſame name, which come from the ſmall Vena Meſaraica. one of the branches of the Vena Portæ, as we ſhall ſee hereafter.

### VENA CRURALIS.

The Crural Vein goes out under the Ligamentum Fallopii, on the inſide of the Crural Artery, and immediately gives ſmall branches to the Inguinal Glands, the Muſculus Pectineus, and parts of generation. Theſe laſt are termed Pudicæ Externæ, and evidently communicate with the internal veins of the ſame name.

About an inch below where it leaves the Abdomen, the Crural vein produces a large branch, which runs down anteriorly between the Integuments and the Sartorius, following the direction of that muſcle almoſt all the way to the inſide of the thigh.

This branch having afterwards got beyond the condyles of the Os Femoris, runs down between the integuments and inner angle of the Tibia to the fore part of the inner ankle, and is diſtributed to the foot. All this large branch is named Vena Saphena, or Saphena major.

After the origin of the Saphena, as the trunk of the Crural vein runs down, it ſinks in between the muſcles, and is diſtributed to all the inner or deep parts of the lower extremity, accompanying the Crural artery to the very extremity of the foot, being all along more conſiderable than the artery, both for capacity and ramifications, a thing very common in the veins.

As the Saphena is a vein of very large extent, we ſhall here deſcribe it all together, and afterwards return to the Vena Cruralis.

## VENA SAPHENA.

The Vena Saphena, in its paſſage from the Ingnen to the foot, is covered only by the ſkin and fat. Immediately after its riſe, it gives ſmall veins to the inferior Inguinal Glands; and then it gives out others more anteriorly, which running under the integuments, communicate with each other by numerous Areolæ, or maſſes. Sometimes theſe communications come all from the rami of one branch.

The Saphena having run down on the thigh, as low as the middle of the Sartorius, ſends off to the ſame ſide ſeveral branches, which communicate with each other, and with the ſuperior branches already mentioned; and as they run down, they communicate again with the trunk of the Saphena.

Theſe two ſorts of communications furniſh a third collateral kind, from which likewiſe particular branches are detached, which communicate with each other at different diſtances all the way to the knee.

Between theſe upper and lower branches, the Saphena ſends backward a particular branch; which, after being diſtributed to the integuments which cover the Gracilis Internus and Triceps, turns backward; and a little below the ham, runs in among the muſcles ſituated there, and communicates with another branch, which may be termed Saphena minor.

Afterwards the trunk of the great Saphena runs down on the inſide of the Tibia, lying always near the ſkin; and at the upper part of that bone, it ſends branches forward, outward and backward.

The anterior branches go to the integuments on the upper part of that leg; the poſterior, to thoſe which cover the Gaſtrocnemii, and communicate with the little Saphena; and the external branches are likewiſe diſtributed to the fat and integuments, and having reached as low as the middle of the Tibia, it ſends a communicating branch to the trunk of the great Saphena.

From this communication, a branch goes out anteriorly, which runs along the integuments of the Tibia, all the way to the outer ankle, having in its paſſage communicated again with the great Saphena.

As the Saphena runs down on the inſide of the Tibia, it ſends out a branch near the middle of that bone, which runs up behind the tendons of the Sartorius, Gracilis Internus, and Semi-Nervoſus, then between the Tibia and upper end of the Soleus, and is joined by an anaſtomoſis with the Crural Vein.

It likewiſe detaches to the fore part of the Tibia ſome branches irregularly tranſverſe; which having been diſtributed to the Perioſteum and bone, communicate with other branches already mentioned.

At the lower part of the Tibia, the Saphena produces a conſiderable branch, which runs obliquely forward over the joint of the Tarſus toward the outer ankle, ſending off ſeveral rami which communicate with each other, and with the trunk of the Saphena.

Laſtly, the extremity of this trunk paſſes on the foreſide of the inner ankle, and runs irregularly under the ſkin, along the interſtice between the firſt two Metatarſal bones toward the great toe, where this vein terminates.

Having got below the inner ankle, it ſends a branch outward and forward, which runs under, and in ſome meaſure accompanies the anterior Tibial Artery. Interiorly it ſends another branch, almoſt from the ſame place, which paſſes under the foot, communicating with the external Tibial Vein by irregular arches, from which veins are ſent to the toes.

Laſtly, before the Saphena terminates at the great toe, it detaches a kind of tranſverſe arch over the Metatarſus, which communicates by ſeveral branches with that arch which lies on the joint of the Tarſus, and ſends others to the toes. This arch gives off likewiſe another branch, which runs up behind the outer ankle, and communicates with the Vena Tibialis Externa.

## Continuation of the VENA CRURALIS.

The Crural Vein having ſent off the Saphena, and the ſmall branches for the Pectineus, &c. as has been ſaid, runs down on the thigh behind the Crural Artery. Oppoſite to the little Trochanter, it produces two large ſhort branches, or one which afterwards divides into two, whereof one is anterior, the other poſterior.

The anterior branch runs more or leſs tranſverſely forward, to be diſtributed to the Vaſtus Internus, lower part of the Pectineus, and of the ſecond Triceps, and to the other two muſcles of the ſame name, running in between them as it goes from one to the other.

The poſterior branch runs more or leſs tranſverſely backward, and furniſhes the Glutæi, Vaſtus Externus, and beginning of the Biceps.

A little below theſe two branches, about the upper extremity of the Vaſtus internus, the Crural Vein produces a branch which runs down on the ſide of the trunk, covering the Crural Artery, almoſt as low as the ham, where it is again united to the trunk by an anaſtomoſis, and ſometimes it is continued ſeparate a little way down on the leg.

It has the name of Vena Sciatica from the Sciatic nerve which it accompanies.

On the outſide of this anaſtomoſis, the Crural Vein gives off a branch which runs backward between the Biceps and neighbouring muſcles, and ſo downward on the backſide of the leg a little exteriorly, and very near the ſkin, all the way to the outer ankle. This vein is termed Saphena minor or externa.

### SAPHENA Minor.

The little Saphena having got near the integuments in its courſe downward, gives out a branch which runs backward, and communicates with the great Saphena about the middle of the backſide of the thigh, as has been already obſerved.

Immediately above and below the ham, this vein ſends out other branches, which likewiſe communicate with the Saphena Major, and having run down about one third part of the backſide of the Tibia, it ſends off another branch which is afterwards re-united to the trunk.

About the beginning of the Tendo Achillis, the little Saphena runs outward in the integuments, toward the outer ankles, where it terminates in cutaneous ramifications ſent to every ſide.

### VENA POPLITEA.

The Crural Vein having detached the little Saphena, runs down between the Biceps and the other flexors of the leg, cloſely accompanied by the Crural Artery, between which and the inner Condyle of the Os Femoris, it is ſituated.

A little above the ham, it takes the name of Vena Poplitea, and as it runs down betwixt the two Condyles, it gives branches to the Flexor muſcles above mentioned, to the lower and poſterior parts of both Vaſti, and to the fat which lies above the interſtice of the two condyles.

It likewiſe gives off ſeveral other branches, one of which runs up laterally between the outer Condyle and the Biceps, and then turning forward, is ramified in the ſame manner with the artery. Another branch goes backward, ſending ramifications to the beginning of the Gaſtrocnemii, after which it runs down on the backſide of theſe muſcles, to the Tendo Achillis.

Near the internal Condyle, the Poplitea ſends ſome lateral branches to extremities of the neighbouring muſcles, eſpecially thoſe of the Semi-Nervoſus, Semi-Membranoſus, &c. Laſtly it ſends a branch toward the external Condyle, which having run for a ſmall ſpace on the Peronæus Longus, goes back again into the trunk.

The Vena Poplitea runs down immediately behind the muſcle of the ſame name, at the lower part of which, it ſends off ſeveral ramifications to each ſide, which divide and unite again in different ways and degrees; and afterwards it loſes its name, being divided into three conſiderable branches, called Tibialis anterior, Tibialis poſterior, and Peronæa; of which the Tibialis poſterior is moſt frequently a continuation of the trunk, and the other two like branches.

## VENA TIBIALIS Anterior.

The Anterior Tibial Vein having diſtributed ſome ſmall branches from its very beginning to the muſcles behind the heads of the two bones of the leg, perforates the interoſſeous ligament from behind, forward, and runs between the ſuperior portions of the Muſculus Tibialis Anticus, and Extenſor Digitorum communis.

As ſoon as it pierces the interoſſeous ligament, it diſtributes ſmall ſuperficial branches to the head of the Tibia and Fibula, which run to the joint of the knee, and communicate with the lateral branches of the Vena Poplitea, already mentioned.

Afterwards it divides into two or three branches, which run down together on the foreſide of the interoſſeous ligament in company with the anterior Tibial Artery, which they ſurround at different diſtances, by ſmall communicating circles.

Theſe branches having reached the lower extremity of the leg, unite in one, which afterwards divides into ſeveral, the ramifications of which are diſtributed to the foot.

A particular branch goes out from the re-united portion which at the lower part of the leg, perforates the interoſſeous ligament from before backward, and communicates with the Vena Tibialis poſterior.

## VENA TIBIALIS Poſterior.

The Poſterior Tibial Vein gives off from its beginning, a branch toward the inſide, which is diſtributed to the Gaſtrocnemii and Soleus. This vein is named Suralis.

Afterward the poſterior Tibialis runs down between the Soleus and Tibialis Poſticus, giving branches to each of them. It is divided in the ſame manner as the Tibialis anterior, into two or three branches, which as they run, ſurround the correſponding artery, by ſmall communicating circles formed at different diſtances.

It continues this courſe in company with the artery as low as the outer ankle, furniſhing the Muſculus Tibialis Poſticus, and the long Flexors of the toes. At the lower part of the leg, it communicates with a tranſverſe branch of the Saphena, and with the anterior Tibial Vein, in the manner already ſaid.

Laſtly, it paſſes on the inſide of the Os Calcis, under the ſole of the foot, where it forms the Venæ Plantares, by dividing into ſeveral tranſverſe arches, which communicate with each other, and with the Saphena, and ſend ramifications to the toes, nearly in the ſame manner as the Arteria Plantaris.

### Vena Peronæa.

The Vena Peronæa is likewiſe double, and ſometimes triple. It runs down on the inſide of the Fibula, almoſt in the ſame direction with the Arteria Peronæa, which it likewiſe ſurrounds at different diſtances, by communicating branches; after the manner of the Tibialis poſterior.

It runs down as low as the outer ankle, communicating ſeveral times with the Tibialis poſterior, and ſending ramifications to the neighbouring portions of the Muſculi Peronæi, and long Flexors of the toes.

The laſt of theſe communications makes the Venæ Plantares, in ſome ſubjects, to appear rather to come from this vein, than from the Tibialis poſterior, from which they commonly ariſe, as we have already obſerved.

### Vena Portæ.

The Vena Portæ is a large vein, the trunk which is ſituated chiefly between the eminences on the lower or concave ſide of the liver, called Portæ by Anatomiſts; and from thence this vein has got the general name of Vena Portæ, or Vena Portarum

It may be conſidered as made up of two large veins, joined almoſt endwiſe by their trunks, from each of which, the branches and ramifications go out in contrary or oppoſite directions. One of theſe trunks adheres to the liver, and is ramified in that viſcus, its branches accompanying the whole diſtribution of the hepatic artery.

The other trunk is without the liver, and ſends its branches to the Viſcera ſupplied by the reſt of the Arteria

Cæliaca, and by the two Meſentericæ, that is, to the ſtomach, inteſtines, pancreas, ſpleen, meſentery and omentum.

The firſt portion of this vein, may be termed Vena Portæ Hepatica, ſuperior or minor, the trunk of which is commonly known by the name of Sinus Venæ Portarum. The other portion may be called Vena Portæ ventralis, inferior or major.

The particular trunk of the Vena Portæ Hepatica is ſituated tranſverſely between the broad anterior eminence of the great lobe of the liver, and the root of the Lobulus, in a particular ſciſſure, and forms what is called the Sinus of the Vena Portæ. From this Sinus five principal branches go out, which are afterwards divided into millions of ramifications through the whole ſubſtance of the liver.

The Vena Portæ lays down the common office of a vein, and becomes a kind of artery as it enters, and is again ramified in the liver.

The large trunk of the Vena Portæ inferior or Ventralis, is ſituated under the lower or concave ſide of the liver, and joined by an anaſtomoſis to the Sinus of the Vena Portæ Hepatica, between the middle and right extremity of that Sinus, and conſequently at a good diſtance from the left extremity. From thence it runs down a little obliquely from right to left, behind or under the trunk of the Arteria Hepatica, bending behind the beginning of the Duodenum, and under the head of the Pancreas; its length being about five fingers breadth.

Having reached to the head of the Pancreas, this trunk loſes the general name of Vena Portæ, and terminates in three large principal branches, which are diſtributed by numerous ramifications, to the Viſcera already named. The firſt branch is termed Vena Meſaraica, or Meſaraica Major; the ſecond, Splenica; and the third, Hæmorrhoidalis interna, or Meſaraica minor.

The Vena Meſaraica major appears to be a continuation of the trunk of the Vena Portæ inferior. The Splenica is a capital branch of that trunk; and the Hæmorrhoidalis interna has ſometimes a common origin with the Splenica, and ſometimes is no more than a branch of that vein. In ſome ſubjects the Meſaraica major and Splenica appear to ariſe by an equal bifurcation of the trunk of the inferior Vena Portæ, and in others, the Hæmorrhoidalis ariſes from the very angle of that bifurcation.

The inferior Vena Portæ, before the formation of theſe three branches, ſends off from the trunk ſeveral ſmall rami, which are commonly the Venæ Cyſticæ, Hepatica minor, Pylorica, Duodenalis, and ſometimes the Gaſtrica Recta, and Coronaria Ventriculi.

All theſe ſmall veins ſometimes ariſe ſeparately; and in other ſubjects, ſome of them go out by ſmall common trunks. It ſometimes happens that ſeveral of them do not come immediately from the trunk of the Vena Portæ, but from one of its great branches.

The Cyſtic Veins run along the Veſicula Fellis from its neck to the bottom; and as they are often no more than two in number, they are called Cyſticæ Gemellæ, a name given likewiſe to the arteries which accompany them. They go out from the right ſide of the great trunk near its beginning ſometimes ſeparately, ſometimes by a ſmall and very ſhort common trunk.

The ſmall Hepatic Vein is commonly a branch of one of the Cyſticæ, or of their common trunk.

The Vena Pylorica ariſes from the great trunk almoſt oppoſite to the origin of the Cyſticæ; and ſometimes is only a branch of the right Gaſtrica. It paſſes over the Pylorus to the ſhort arch of the ſtomach, where it is join'd by anaſtomoſis with the Coronaria Ventriculi.

The Duodenal Vein, commonly called Vena Inteſtinalis, goes out from the great trunk near the Cyſticæ, and ſometimes from the ſmall common trunk of theſe veins. It is diſtributed chiefly to the Inteſtinum Duodenum, and ſends likewiſe ſome rami to the Pancreas. There is another vein called alſo Duodenalis, which is a branch of the Gaſtrica of the ſame ſide.

The Vena Gaſtrica, or Gaſtro-Epiploica Dextra, and the Coronaria Ventriculi, come more ſeldom from the trunk of the Vena Portæ, than from its great branches, with which we therefore chuſe to deſcribe them.

## VENA MESARAICA Major.

The inferior Vena Portæ, having given off the Splenica, changes its name to that of Meſaraica, or Meſſarſica major, which often appears to be rather a continuation of the trunk, than one of the great branches, as has been already obſerved.

It bends toward the ſuperior Meſenteric Artery, ſending off two veins, and afterwards running up over that artery, it accompanies it in thoſe portions of the Meſentery and Meſocolon which belong to the ſmall inteſtines, the Cæcum, and right portion of the Colon. As it runs down, it forms an oblique arch almoſt like that of the artery, which is likewiſe ramified on both the convex and concave ſides, but not ſo regularly.

The firſt particular branch from this trunk is called by *Riolan* Vena Colica. It goes out from the anterior part of the trunk, before it joins the artery, and runs directly to the middle of the Colon, where it divides to the right and left, and forms arches. On the left hand it communicates with the ſuperior or aſcending branch of the Hæmorrhoidalis; and on the right, with the ſecond branch of the Meſaraica.

This ſecond branch is a little under the firſt, or Colica anterior, and ſomething more toward the right hand. It may be named Gaſtro-Colica, and is ſoon divided into two branches, one ſuperior, the other inferior.

The ſuperior branch of the Vena Gaſtro-Colica, ſends ſmall veins to the head of the Pancreas, and forms the Vena Gaſtrica, or Gaſtro-Epiploica Dextra, which goes from the Pylorus to the great curvature of the ſtomach, and communicates with the Gaſtrica Siniſtra.. In its paſſage it ſupplies the ſtomach and omentum, and communicates with the Pylorica, Coronaria Ventriculi, &c. as has been already ſaid; and ſometimes it forms the Pylorica.

The inferior branch of the Vena Gaſtro-Colica, which may be called Colica Dextra, goes to the right portion of the Colon; and from thence to the upper part of that inteſtine, where it is divided archwiſe, and communicates with the right branch of the Colica anterior, and with a branch of the Vena Cæcalis, as we ſhall ſee hereafter.

The trunk of the great Meſaraic Vein ſends out ſometimes, oppoſite to the Gaſtrica, a particular branch to the Omentum, called Epiploica Dextra. But almoſt immediately before it aſcends over the Meſenteric Artery, it produces two large branches very near each other, which paſs behind and under the artery, being diſtributed to the Jejunum and part of the Ilium by numerous ramifications, which form arches and Areolæ like thoſe of the artery.

Afterwards the trunk of the Meſaraica paſſes over the ſuperior Meſenteric Artery, to which it adheres very cloſely, and from the convex ſide of its arch ſends out ſeveral branches almoſt in the ſame manner with the artery; but with this difference, that oftentimes the branches do not ariſe immediately from the vein in ſo great numbers; and each of them ſends out many more ramifications.

From the concave ſide of the Meſaraic Vein, a little below the origin of the ſecond branch from the convex ſide, ariſes a branch called by *Riolan* Vena Cæcalis, which runs to the beginning of the Colon, croſſing one of the branches of the ſuperior Meſenteric Artery.

This Cæcal Vein divides by two arches, the uppermoſt of which communicates with the lower branch of the Vena Gaſtro-Colica; the other, after having ſent ramifications to the Inteſtinum Cæcum, and Appendicula Vermiformis, communicates below, with the extremity of the great Meſaraic Vein.

## VENA SPLENICA.

The Splenic Vein is one of the three great branches of the Vena Portæ, and may be ſaid in ſome meaſure to be a ſubordinate trunk of that vein. It runs tranſverſely from the right to the left, firſt under the Duodenum, and then along the lower ſide of the Pancreas, near the poſterior edge.

In this courſe it gives off ſeveral veins, *viz.* the Vena Coronaria Ventriculi, Pancreaticæ, Gaſtrica, or Gaſtro-Epiploica Siniſtra. It likewiſe often gives origin to the

Hæmorrhoidalis Interna, the third capital branch of the Vena Portæ.

It terminates afterwards by a winding courſe, being divided into ſeveral branches that go to the Spleen; one of which produces the ſmall Veins called by the Ancients Vaſa Brevia.

The Coronaria Ventriculi, ſo called becauſe it ſurrounds more or leſs the upper orifice of the ſtomach, runs along the ſmall arch of that viſcus toward the Pylorus, where it joins and becomes continuous with the Vena Pylorica. In its paſſage, it gives ſeveral rami to the ſides of the ſtomach, which there form numerous Areolæ, and communicate with the veins of the great arch.

It ariſes pretty often from the beginning of the Splenica, and ſometimes from the left ſide of the extremity of the great trunk of the Vena Portæ, behind the Hepatic Artery; and in that caſe, it is the moſt conſiderable of all the ſmall veins that go out from the great trunk.

The Venæ Pancreaticæ are ſeveral ſmall branches ſent by the Splenica to the Pancreas, along its lower ſide. There are other ſmall Pancreatic veins which do not ariſe from the Splenica, as has been ſaid in the deſcription of the Gaſtro-Colica, one of the branches of the great Meſaraic trunk.

The left Gaſtric or Gaſtro-Epiploic vein, goes out from the Splenica at the left extremity of the Pancreas; from whence it runs to the great extremity of the ſtomach, and along the great arch, till it meets the Gaſtrica Dextra, which is continuous with the Siniſtra.

In its paſſage, it gives ſeveral branches to both ſides of the ſtomach, which are diſtributed by numerous ramifications, form many Areolæ, and communicate with the branches of the Coronaria Ventriculi.

At a ſmall diſtance from its origin, this Gaſtric Vein ſends out a branch, which is diſtributed to the Omentum; and on this account it has been called Gaſtro-Epiploica. This branch ſeems to communicate with the Hæmorrhoidalis interna.

The Vena-Epiploica Siniſtra ariſes at the ſmall extremity of the Pancreas, and is ramified on the Omentum all the way to the Colon, where it communicates with the Hæmorrhoidalis interna. When this vein is wanting, the branch of the leſt Gaſtrica already mentioned, ſupplies its place. It ſometimes comes from the moſt anterior branch, which the Splenica ſends to the Spleen.

Laſtly, the Vena Splenica reaches the fiſſure of the Spleen, which it enters through its whole length by ſeveral branches, almoſt in the ſame manner as the Splenic Artery. It is from the moſt poſterior of theſe branches that the veins are ſent off to the great extremity of the ſtomach, formerly known by the name of Vaſa Brevia, which communicate with the Coronaria Ventriculi and Gaſtrica Siniſtra.

### VENA HÆMORRHOIDALIS INTERNA, ſive MESARAICA MINOR.

The internal Hæmorrhoidal Vein is one of the three great branches of the Vena Portæ, coming ordinarily from the beginning of the Vena Splenica, and ſometimes from the extremity or angle of the bifurcation of the great trunk of the Vena Portæ.

At a ſmall diſtance from its beginning, it gives to the Duodenum a ſecond Vena Duodenalis, which is ſometimes more conſiderable than the firſt, or that which comes from the great trunk of the Vena Portæ.

Afterwards it is divided into two branches, one ſuperior or aſcending, the other inferior or deſcending. The firſt runs to the upper part of the arch of the Colon, where, after many ramifications, it communicates with a branch of the great Meſaraica, with the ramifications of the Gaſtro-Epiploica Siniſtra, and with thoſe of the neighbouring Epiploica.

The inferior branch runs down on the leſt portion of the Colon, on the lower incurvations of that Inteſtine, and on the Rectum all the way to the Anus. In this courſe, it ſupplies the Meſocolon, and forms arches, which ſend out numerous ſmall ramifications which ſurround theſe inteſtines. It ſeems likewiſe to communicate by ſome capillary twigs with the leſt ſpermatick vein.

This vein has been named Hæmorrhoidalis from the tumours often found at its extremity next the Anus, which are called Hæmorrhoides. The word *Interna* is added to diſtinguiſh this vein from the Hæmorrhoidalis externa, which comes from the Vena Hypogaſtrica, and with which this vein communicates by capillary ramifications. The name of Meſaraica minor agrees to it very well, becauſe of its ſituation, with reſpect to the inferior Meſenteric Artery, which is alſo leſs than the ſuperior.

## Of the Nerves.

ALL the Nerves of the human body come originally from the Cerebrum or Cerebellum, by means of the Medulla Oblongata, or Medulla Spinalis. They go out in bundles regularly diſpoſed in pairs, like ſo many diſtinct trunks, which are afterwards divided and ſubdivided into numberleſs branches and filaments.

The Nerves of the Medulla Oblongata go out, for the moſt part, through the baſis of the Cranium, at holes ſituated according to their diſpoſition. Thoſe of the Medulla Spinalis paſs through the lateral Foramina of all the Vertebræ, and through the great anterior Foramina of the Os Sacrum.

Ten pair of theſe Faſciculi or nervous trunks are commonly reckoned to the Medulla Oblongata, nine of which go out ſeparately thro' particular holes of the baſis cranii; and the tenth, which ariſes from the extremity of that Medulla, paſſes through the great Occipital Foramen.

The trunks from the ſpinal marrow are 24 pair, and may in general be termed Nervi Vertebrales or Intervertebrales. Seven of them are called Cervical Nerves; twelve, Dorſal or Coſtal, being true Intercoſtal Nerves; and five, Lumbar: to which muſt be added five or ſix pair which paſs through the Os Sacrum.

The Medullary ſubſtance of which the nervous fibrils are compoſed, is very tender, and would not be able to reſiſt ſuch forces as the nerves are expoſed to even within the bones, were not the Pia Mater and Tunica Arachnoides continued upon them; the former giving them firmneſs and ſtrength, and the latter furniſhing a cellular coat to connect the threads of the Nerves, to let them lie ſoft and moiſt, and to ſupport the veſſels which accompany them.

But theſe coats alone would not make the Nerves ſtrong enough to bear the ſtretching and preſſure they are expoſed to in their courſe to the different parts of the body; and therefore, where the Nerves go out at the holes in the Cranium and Spine, the Dura Mater is generally wrapt cloſely round them, to collect their diſgregated fibres into tight firm cords; and that the tenſion which they may happen to be expoſed to may not injure them before they have got this additional coat, it is firmly fixed to the ſides of the holes in the bones through which they paſs.

To theſe coats an infinite number of veſſels both arteries and veins are diſtributed; ſo that after a nice injection the whole cord is tinged with the colour of the injected liquor; but when the fibrils are examined, even with the beſt microſcope, they appear only like ſo many diſtinct threads running parallel, without any cavity obſervable in them.

Nerves are generally lodged in a cellular or fatty ſubſtance, and have their courſe in the interſtices of muſcles where they are guarded from preſſure; but in ſeveral parts they are ſo placed, as if it were intended that they ſhould there ſuffer the vibrating force of arteries, or the preſſure of the contracting fibres of muſcles. In their courſe to the places for which they are deſtined they generally run as ſtraight as the part over which they are to paſs, and their own ſafety from external injuries will permit, ſending off their branches at very acute angles, and conſequently running more parallel than the blood veſſels. Their diſtribution is ſeldom different in the oppoſite ſides of the ſame ſubject, nor indeed in any two ſubjects is there conſiderable variety found.

Frequently nerves which come out diſtinct or ſeparate, afterwards conjoin into one faſciculus, under the ſame common covering. In ſome parts where there are ſuch conjunctions, the bulk of the nerves ſeems much increaſed, and theſe knotty oval bodies, called by Fallopius Corpora Olivariæ, and now generally named Ganglions, are formed. The coats of theſe knots are ſtronger, thicker, and more muſcular than the whole nerves which enter into them would ſeem to conſtitute, while the nervous fibrils paſs through without any great alteration or change.

How ſmall one of the nervous fibrils is we know not; but when we conſider that every, even the moſt minute part of the body is ſenſible, and that this muſt depend on the nerves, which all conjoined would not make a cord of an inch diameter, we muſt be convinced that their filaments are extremely ſmall.

The nerves ſent to the organs of the ſenſes, loſe there their firm coats, and terminate in a pulpy ſubſtance. The Optic Nerves are expanded into the ſoft tender webs of the Retinæ. The auditory nerve has ſcarce the conſiſtence of Mucus in the Veſtibulum, Cochlea, and ſemicircular canals of each ear. The papillæ of the noſe, tongue, and ſkin, are all very tender. The nerves of muſcles can likewiſe be traced till they ſeem to loſe their coats by becoming very ſoft: From all which, there is reaſon to conclude, that the muſcular nerves are alſo pulpy at their terminations, though we are not able to proſecute them ſo far as to diſcover this by diſſection.

Experiments have left no room to doubt of the nerves being the ſole organs of ſenſation. Their mode of operation however is not ſo eaſily aſcertained. To account for this various hypotheſes have been propoſed. Some have imagined that the nerves were elaſtic cords, reſembling fiddle ſtrings, and that they conveyed ſenſations to the brain by a kind of vibratory motion. Others have ſuppoſed them to be tubular and to contain a fluid called Animal Spirits, by the motions of which ſenſation was produced. A third hypotheſis ſuppoſes the nerves to be only a ſet of conductors, and that they are pervaded by an elaſtic fluid called *Æther*, by the oſcillations of which all our ſenſations, *&c.* are occaſioned.

It is not our buſineſs here to examine the merit of theſe different hypotheſes. We will venture however to affirm, after all that has been ſaid and wrote upon the ſubject, that we are ſtill as much in the dark as ever with regard to the manner in which our ſenſations are produced, and that we are likely to remain ſo.

## Of the PARTICULAR NERVES.

### NERVI OLFACTORII.

Of the ten pair of nerves which come from the encephalon, the firſt is the Olfactory, which long had the name of the Mamillary Proceſſes of the brain, becauſe in the brutes, cows and ſheep, which were moſt commonly diſſected by the antients, the anterior ventricles of the brain are extended forwards upon theſe nerves, and adhere ſo firmly to them, that they ſeem to make the upper ſide of the nerves. Each of them being large, where it begins to be ſtretched out, and gradually becoming ſmaller as it approaches the cribriform bone, was imagined to reſemble a nipple. Thoſe who miſtook the ventricles for part of the nerves, obſerving the cavity in them full of liquor, concluded, that theſe olfactory nerves ſerved to convey the ſuperfluous moiſture of the brain to the holes of the ethmoid bone through which it paſſed into the noſe.

In man, the ventricles of whoſe brain are not thus extended forwards, theſe nerves are ſmall, long, and without any cavity, having their origin from the Corpora Striata, near the part where the internal carotid arteries are about to ſend off their branches to the different parts of the brain; and in their courſe under the anterior lobes of the brain, which have each a depreſſion made for lodging them, the human Olfactory nerves become larger, till they are extended to the cribriform bone; where they ſplit into a great number of ſmall filaments, to paſs through the little holes in that bone; and being joined by a branch of the fifth pair of nerves, are ſpread on the membrane of the noſe.

The tender ſtructure and ſudden expanſion of theſe nerves on ſuch a large ſurface, render it impoſſible to trace them far; which has made ſome authors deny them to be nerves; But when we break the circumference of the cribriform Lamella, and then gently raiſe it, we may ſee the diſtribution of the nerves ſome way on the membrane of the noſe.

The contrivance of defending theſe long ſoft nerves from being too much preſſed by the anterior lobes of the brain under which they lie, is ſingular; becauſe they have not only the prominent orbitor proceſſes of the frontal bone to ſupport the brain on each ſide, with the veins going into the longitudinal ſinus, and other attachments bearing it up, but there is a groove formed in each lobe of the brain itſelf for them to lodge in.

Their ſplitting into ſo many ſmall branches before they enter the bones of the ſcull, is likewiſe peculiar to them; for generally the nerves come from the brain in diſgregated filaments, and unite into cords, as they are going out at the holes of the bones. This contrivance is the beſt for anſwering the purpoſe they are deſigned for, of being the organ of ſmelling; for had they been expanded upon the membrane of the noſe into a medullary web, ſuch as the optic nerve forms, it would have been too ſenſible to bear the impreſſions of ſuch objects as are applied to the noſe; and a diſtribution in the more common way, of a cord ſending off branches, would not have been equal enough for ſuch an organ of ſenſation.

## Nervi Optici.

The 2d Pair of nerves, the Optic, riſing from the Thalami nervorum Opticorum, make a large curve outwards, and then run obliquely inwards and forwards, till they unite at the fore-part of the Sella Turcica: then ſoon divide, and each runs obliquely forwards and outwards to go out at its proper hole in the ſphenoid bone, accompanied with the ocular artery, to be extended to the globe of the eye, within which each is expanded into a very fine cup-like web, that lines all the inſide of the eye as far forwards as the ciliary circle, and is univerſally known by the name of Retina.

Though the ſubſtance of this pair of nerves ſeems to be blended at the place where they are joined; yet obſervations of people whoſe optic nerves were not joined, and of others who were blind of an eye from a fault in the optic nerve, or in thoſe who had one of their eyes taken out, make it appear, that there is no ſuch intimate union of ſubſtance; the optic nerve of the affected ſide only being waſted, while the other was large and plump. In many fiſhes indeed, the doctrine of decuſſation is favoured; for their optic nerves plainly croſs each other, without any union at the part where they are joined in men and moſt quadrupeds.

Theſe people whoſe optic nerves were not joined, having neither ſeen objects double, nor turned their eyes different ways, is alſo a plain proof, that the conjunction of the optic nerves will not ſerve to account for either the uniform motions of the eyes, or our ſeeing objects ſingle with two eyes, though it may be one cauſe of the remarkable ſympathy of the one eye with the other in many diſeaſes.

The Retina of a recent eye, without any preparation, appears a very fine web, with ſome blood-veſſels coming from its center to be diſtributed on it; but, after a good injection of the arteries that run in the ſubſtance of this nerve, as is common to other nerves, it is with difficulty we can obſerve its nervous medullary ſubſtance.

The ſituation of theſe veſſels in the central part of the optic nerve; the want of medullary fibres here, and the firmneſs of this nerve before it is expanded at its entry into the ball of the eye, may be the reaſon why we do not ſee ſuch bodies, or parts of bodies, whoſe picture falls on this central part of the Retina.

If theſe veſſels loſe their tone, and remain preternaturally diſtended, no objects affect our Retina, though the eye externally appears ſound; this may be one cauſe of an Amauroſis or Gutta Serena. From a partial diſtenſion of theſe veſſels, or paralyſis of a part of the Retina, the central part, or the circumference, or any other part of objects, may be loſt to one or both eyes.

## NERVI MOTORES Oculorum.

The Third Pair riſe from the anterior part of the Proceſſus Annularis, and piercing the Dura Mater a little before, and to a ſide of the ends of the poſterior clinoid proceſs of the Sphenoid bone, run along the Receptacula, or cavernous Sinuſes, at the ſide of the Ephippium, to get out at the Foramina Lacera; after which each of them divides into branches of which one, after forming a little ganglion, is diſtributed to the globe of the eye; the others are ſent to the Muſculus Rectus of the Palpebra, and to the Attollens, Adductor, Deprimens, and Obliquus Minor muſcles of the eye-ball. Theſe muſcles being principal inſtruments in the motions of the eye-lid and eye-ball, this nerve has therefore got the name of the Motor-Oculi.

## NERVI PATHETICI.

The Fourth Pair, which are the ſmalleſt nerves of any, derive their origin from the back-part of the baſe of the Teſtes; and then making a long courſe on the ſide of the annular protuberance, enter the Dura Mater a little farther back, and more externally than the third pair, to run alſo along the Receptacula, to paſs out at the Foramina Lacera, and to be entirely ſpent on the Muſculi Trochleares, or ſuperior oblique muſcles of the eyes. Theſe muſcles being employed in performing the rotatory motions, and the advancement of the eye-balls forward, by which ſeveral of our paſſions are expreſſed, the nerves that ſerve them have got the name of Pathetici.

## NERVI TRIGEMINI.

The Fifth Pair are large nerves, riſing from the annular proceſſes where the medullary proceſſes of the Cerebellum join in the formation of that Tuber, to enter the Dura Mater near the point of the petrous proceſs of the temporal bones; and then ſinking cloſe by the Receptacula at the ſides of the Sella Turcica, each becomes in appearance thicker, and goes out of the ſcull in three great branches.

The firſt branch of the fifth is the OPHTHALMIC, which runs through the Foramen Lacerum to the orbit, having in its paſſage thither a connection with the ſixth pair. It is afterwards diſtributed to the ball of the eye with the third; to the noſe, along with the Olfactory, which the branch of the fifth that paſſes through the Foramen Orbitarium Internum joins, as was already mentioned in the deſcription of the firſt pair. This Ophthalmic branch likewiſe ſupplies the parts at the internal Canthus of the orbit, the Glandula Lacrymalis, fat, membranes, muſcles, and teguments of the eye-lids; its longeſt fartheſt extended branch paſſing through the Foramen Superciliare of the Os Frontis, to be diſtributed to the fore-head.

The ſecond branch of the fifth pair of nerves may be called MAXILLARIS SUPERIOR, from its ſerving principally the parts of the upper jaw. It goes out at the round hole of the ſphenoid bone, and ſends immediately one branch into the channel on the top of the Antrum Maxillare; the membrane of which and the upper teeth are ſupplied by it in its paſſage. As this branch is about to go out at the Foramen Orbitarium Externum, it ſends a nerve through the ſubſtance of the Os Maxillare to come out at Steno's duct, to be diſtributed to the fore-part of the palate; and what remains of it eſcaping at the External Orbitar hole, divides into a great many branches, that ſupply the cheek, upper lip, and noſtril.

The next conſiderable branch of the Superior Maxillary nerve, after giving branches which are reflected through the ſixth hole of the ſphenoid bone, to join the intercoſtal where it is paſſing through the ſcull with the Carotid Artery, and the Portio Dura of the ſeventh pair, as it paſſes through the Os Petroſum, is ſent into the noſe by the hole common to the palate and ſphenoidal bone; and the remaining part of this nerve runs in the Palato-Maxillaris canal, giving off branches to the temples and pterygoid muſcles, and comes at laſt into the palate to be loſt.

The third or MAXILLARIS INFERIOR branch of the fifth pair going out at the oval hole of the ſphenoid bone, ſerves the muſcles of the lower jaw, and the muſcles ſituated between the Os Hyoides and Jaw: All the Salivery Glands, the Amygdalæ, and the external ear, have branches from it: It has a large branch loſt in the tongue, and ſends another through the canal in the ſubſtance of the lower jaw to ſerve all the teeth there, and to come out at the hole in the forepart of the jaw, to be loſt in the chin and under lip.

## Nervi Motores Externi.

The Sixth Pair, which is the ſmalleſt except the fourth, riſes from the fore-part of the Corpora Pyramidalia; and each entering the Dura Mater ſome way behind the poſterior clinoid proceſs of the ſphenoid bone, has a long courſe below that membrane, and within the Receptaculum at the ſide of the Sella Turcica, where it is immerſed in the blood of the receptacle; it goes afterwards out at the Foramen Lacerum into the orbit, to ſerve the Abductor muſcle of the eye.

In the paſſage of this nerve below the Dura Mater, it lies very contiguous to the internal Carotid Artery, and to the Ophthalmic branch of the fifth pair of nerves. At the place where the ſixth pair is contiguous to the Carotid, a nerve either goes from each of them in an uncommon way, to wit, with the angle beyond where it riſes obtuſe, to deſcend with the artery, and to form the beginning of the intercoſtal nerve, according to the common deſcription; or according to other authors, this nerve comes up from the great Ganglion of the intercoſtal, to be joined to the ſixth here.

The arguments for this latter opinion are, That, according to the common doctrine, this beginning of the intercoſtal nerve, as it is called, would riſe in a manner not ſo ordinary in nerves. In the next place, it is obſerved, that the ſixth pair is larger nearer to the orbit, than it is before it comes to the place where this nerve is ſaid to go off; and therefore it is probable, that it receives an addition there, rather than gives off a branch. *Laſtly*, It has been found, that upon cutting the Intercoſtal nerves of living animals, the eyes plainly were affected; they loſt their bright water; the gum, or gore, as we call it, was ſeparated in great quantity; the pupil was more contracted; the cartilaginous membrane, at the internal Canthus, came more over the eye; and the eye-ball itſelf was diminiſhed.

To this it is anſwered, in defence of the more common doctrine. 1*ſt*, That other branches of nerves go off in a reflected way, as well as this does, ſuppoſing it to be the beginning of the intercoſtal; and that the reflection would rather be greater, if it is thought to come up from the intercoſtal to the ſixth. 2*dly*, It is denied that this nerve is for ordinary thicker at its fore than its back-part; and if it was ſuppoſed to be thickeſt nearer to the orbit, the concluſion made above could not be drawn from this appearance, becauſe other nerves enlarge ſometimes where there is no addition made to them, as in the inſtance already mentioned of the trunk of the fifth pair while below the Dura Mater. 3*dly*, The experiments on living animals ſhew indeed, that the eyes are affected upon cutting the intercoſtal nerve, but not in the way which might have been expected, if the intercoſtal had furniſhed ſuch a ſhare of the nerve that goes to the Abductor muſcle of the eye; for it might have been thought, that this muſcle would have been ſo much weakened immediately upon cutting the Intercoſtal, that its antagoniſt the Adductor would have greatly prevailed over it, and have turned the eye ſtrongly in towards the noſe; which is not ſaid to be a conſequence of this experiment. So that the arguments are ſtill equivocal; and more obſervations and experiments muſt be made, before it can be determined with certainty, whether the ſixth pair gives or receives a branch here. In the mean time, we ſhall continue to ſpeak about the origin of the Intercoſtal with the generality of Anatomiſts.

At this place where the Intercoſtal begins, the fifth pair is contiguous and adherent to the ſixth; and it is generally ſaid, that the Ophthalmic branch of the fifth gives a branch or two to the beginning of the Intercoſtal, or receives ſuch from it. Others deny any ſuch communication between them; and thoſe who affirm the comunication confeſs, that in ſome ſubjects they could not ſee it.

## Nervi Auditorii.

The Seventh Pair come out from the lateral part of the Annular proceſs, behind where the Medullary proceſſes of the Cerebellum are joined to that Tuber; and each being accompanied with a larger artery than moſt other nerves, enters the Internal Meatus Auditorius, where the two large bundles of fibres, of which it appeared to conſiſt within the ſcull, ſoon ſeparate from each other; one of them entering by ſeveral ſmall holes into the Veſtible, Cochlea, and ſemicircular canals, is ſtretched on this inner Camera of the ear in a very ſoft pulpy ſubſtance; and being never ſeen in the form of a firm cord, ſuch as the other parcel of this and moſt other nerves become, is called PORTIO MOLLIS of the auditory nerve.

The other part of this ſeventh pair paſſes through Galen's Foramen Cæcum, or Fallopius's Aquæduct, in its crooked paſſage by the ſide of the Tympanum; in which paſſage, a nerve ſent from the Lingual branch of the inferior Maxillary nerve, along the outſide of the Tuba Euſtachiana, and croſs the cavity of the Tympanum, where it has the name of Chorda Tympani, is commonly ſaid to be joined to it. The very acute angle which this nerve makes with the fifth, or the ſudden violent reflection it would ſuffer on the ſuppoſition of its coming from the fifth to the ſeventh, appears unuſual; whereas, if we ſuppoſe that it comes from the ſeventh to the fifth, its courſe would be more in the ordinary way, and the Chorda Tympani would be eſteemed a branch of the ſeventh pair going to join the fifth, the ſize of which is increaſed by this acquiſition.

This ſmaller bundle of the ſeventh gives branches to the muſcles of the Malleus, and to the Dura Mater, while it paſſes through the bony crooked canal, and at laſt comes out in a firm chord named PORTIO DURA, at the end of this canal, between the Styloid and Maſtoid proceſſes of the temporal bone, giving immediately filaments to the little Oblique muſcles of the head, and to thoſe that riſe from the Styloid proceſs. It then pierces through the Parotid gland, and divides into a great many branches, which are diſperſed in the muſcles and teguments that cover all the ſide of the upper part of the neck, the whole face and Cranium, as far back as the temples, including a conſiderable part of the external ear.

## NERVI SYMPATHETICI MEDII, ſeu PAR VACUM.

The Eight Pair of nerves riſe from the lateral baſes of the Corpora Olivaria in diſgregated fibres; and as they are entering the anterior internal part of the holes common to the Os Occipitis and Temporum, each is joined by a nerve which aſcends within the Dura Mater from the tenth of the head, the firſt, ſecond and inferior cervical nerves: This, every body knows, has the name of the NERVUS ACCESSORIUS. When the two get out of the ſcull, the Acceſſorius ſeparates from the eighth, and deſcending obliquely outwards, paſſes through the Sterno-maſtoideus muſcle, to which it gives branches, and afterwards terminates in the Trapezius and Rhomboid muſcles of the Scapula. In this courſe it is generally more or leſs joined by the ſecond cervical nerve.

The large Eighth Pair, ſoon after its exit, gives nerves to the tongue, Larynx, Pharynx, and Ganglion of the Intercoſtal nerve, and being disjoined from the ninth and intercoſtal, to which it adheres cloſely ſome way, runs ſtraight down the neck behind the Internal Jugular Vein, and at the external ſide of the Carotid Artery. As it is about to enter the Thorax, a large nerve goes off from the eighth of each ſide: This branch of the right-ſide turns round from the fore to the back part of the Subclavian Artery, while the branch of the left-ſide turns round the great curve of the Aorta, and both of them mounting up again at the ſide of the Oeſophagus, to which they give branches, are loſt at laſt in the Larynx. Theſe are called the RECURRENT Nerves, which we are deſired to ſhun in the operation of Bronchotomy, though their deep ſituation protects them ſufficiently.

The muſcles of the Larynx being in a good meaſure ſupplied with nerves from the recurrents, it is to be expected, that the cutting of them will greatly weaken the voice, though it will not be entirely loſt, ſo long as the ſuperior branches of the eighth pair are entire.

The eighth pair, above and at or near the place where the recurrent nerves go off from it, or frequently the recurrents themſelves, ſend off ſmall nerves to the Pericardium, and to join with the branches of the intercoſtal that are diſtributed to the heart; but their ſize and ſituation are uncertain.

After theſe branches are ſent off, the Par Vagum on each ſide deſcends behind the great branch of the Trachea, and gives numerous filaments to the lungs, and ſome to the heart in going to the Oeſophagus. The one of the left ſide running on the fore-part of the Oeſophagus, communicates by ſeveral branches with the right one in its deſcent to be diſtributed to the ſtomach: The right one gets behind the Oeſophagus, where it ſplits and rejoins ſeveral times before it arrives at the ſtomach, to which it ſends nerves; and then being joined by one or more branches from the left trunk, they run towards the Cæliac Artery, there to join into the great Semilunar Ganglion formed by the two intercoſtals.

## NERVI HYPOGLOSSI.

The Ninth Pair of nerves comes from the inferior part of the Corpora Pyramidalia, to go out of the ſcull at their proper holes of the Occipital Bone. After their egreſs they adhere for ſome way firmly to the eighth and intercoſtal; and then ſending a branch, that in many ſubjects is joined with branches of the firſt and ſecond cervical nerves, to be diſtributed to the Thyroid Gland and muſcles on the fore-part of the Trachea Arteria, the ninth is loſt in the muſcles and ſubſtance of the tongue. Some have thought this nerve, and others have eſteemed the third branch of the fifth pair of nerves, to be the proper guſtatory nerve. No obſervation or experiments prove either opinion, or aſſure us, that both nerves do not ſerve for taſting and for the motion of the tongue.

### NERVI SUB-OCCIPITALES.

The Tenth Pair riſes in ſeparate threads from the ſides of the ſpinal marrow, to go out between the Os Occipitis and firſt vertebra of the neck. After each of them has given branches to the great ganglion of the intercoſtal, 8th, 9th, and 1ſt cervical nerves, it is diſtributed to the ſtreight, oblique, and ſome of the extenſor muſcles of the head. Whether the name of the tenth of the head, or of the firſt vertebral, ought to be given to this pair of nerves, is of no ſuch conſequence as to deſerve a debate, tho' it has ſome of the marks of the ſpinal nerves, to wit, its being formed of filaments proceeding from both the fore and back part of the Medulla, and a little ganglion being formed where theſe filaments meet.

In the deſcription of the ſixth pair we followed the uſual way of ſpeaking among anatomiſts, and called that the beginning of the intercoſtal nerve which comes out of the ſcull; and therefore ſhall here ſubjoin a curſory deſcription of this nerve, notwithſtanding its much larger part is compoſed of nerves coming out from the ſpinal marrow. There is no greater incongruity in point of method to ſay, that the nerve we are deſcribing receives additions from others that have not been deſcribed, than it is to repeat in the deſcription of a great many nerves, that each of them gives branches to form a nerve which we are ignorant of; which is all the difference between deſcribing the intercoſtal before or after the ſpinal nerves.

The branch reflected from the ſixth pair, joined poſſibly by ſome filaments of the ophthalmic branch of the fifth, runs along with the internal carotid artery through the crooked canal formed for it in the Temporal bone, where the little nerve is very ſoft and pappy, and in ſeveral ſubjects divides and unites again, and is joined by one or more branches from the fifth, particularly of its ſuperior maxillary branch, before it comes out of the ſcull.

As ſoon as the nerve eſcapes out of this bony canal, it is connected a little way with the eighth and ninth; then ſeparating from theſe, after ſeeming to receive additional nerves from them, it forms a large ganglion, into which branches from the tenth of the head, and from the firſt and ſecond cervical, enter. From this ganglion the nerves come out again ſmall to run down the neck along with the carotid Artery, communicating by branches with the cervical Nerves, and giving nerves to the muſcles that bend the head and neck.

As the Intercoſtal is about to enter the Thorax, it forms another ganglion, from which nerves are ſent to the Trachea and to the heart; theſe deſigned for the heart joining with the branches of the eighth, and moſt of them paſſing between the two great arteries and the auricles, to the ſubſtance of that muſcle. The intercoſtal after this conſiſting of two branches, one going behind, and the other running over the fore-part of the Subclavian Artery, forms a new ganglion where the two branches unite below that artery, and then deſcending along the ſides of the Vertebræ of the Thorax, receives branches from each of the dorſal nerves; which branches appearing to come out between the ribs, have given the name of Intercoſtal to the whole nerve.

Where the addition is made to it from the fifth dorſal nerve, a branch goes off obliquely forwards; which being joined by ſuch branches from the ſixth, ſeventh, eighth, and ninth dorſal, an anterior trunk is formed, and paſſes between the fibres of the Appendix Muſculoſa of the Diaphragm, to form, along with the other intercoſtal and the branches of the eighth pair, a large Semilunar Ganglion, ſituated between the Cæliac and ſuperior Meſenteric Arteries; the roots of which are as it were involved in a ſort of nervous net-work of this ganglion, from which a great number of very ſmall nervous threads run out to be extended on the ſurface of all the branches of thoſe two arteries, ſo as to be eaſily ſeen when any of the arteries are ſtretched, but not to be raiſed from them by diſſection; and thus the Liver, Gall-bladder, Duodenum, Pancreas, Spleen, Jejunum, Ilium, and a large ſhare of the Colon, have their nerves ſent from this great Solar Ganglion or Plexus.

Several fibres of this Ganglion, running down upon the Aorta, meet with other nerves ſent from the poſterior trunk of the intercoſtal, which continues its courſe along the ſides of the Vertebræ, they ſupply the Glandulæ Renales, Kidneys, and Teſtes in men, or Ovaria in women; and then they form a net-work upon the inferior Meſenteric Artery where the nerves of the two ſides meet, and accompany the branches of this artery to the part of the Colon that lies in the left ſide of the belly, and to the Rectum, as far down as to the lower part of the Pelvis.

The Intercoſtal continuing down by the ſide of the Vertebræ of the loins, is joined by nerves coming from between theſe Vertebræ, and ſends nerves to the organs of generation and others in the Pelvis, being even joined with thoſe that are ſent to the inferior extremities.

## Nervi Vertebrales.

The Spinal Nerves riſe generally by a number of diſgregated fibres from both the fore and back part of the Medulla Spinalis, and ſoon after form a little knot or ganglion, where they acquire ſtrong coats, and are extended into firm cords. They are diſtinguiſhed by numbers, according to the Vertebræ from between which they come out; the ſuperior of the two bones forming the hole thro' which they paſs, being the one from which the number is applied to each nerve.

The FIRST CERVICAL Pair of Nerves comes out between the firſt and ſecond Vertebræ of the neck; and having given branches to join with the tenth pair of the head, the ſecond Cervical and Intercoſtal, and to ſerve the muſcles that bend the neck, it ſends its largeſt branches backwards to the extenſor muſcles of the head and neck; ſome of which piercing through theſe muſcles, run up on the Occiput to be loſt in the teguments here; and many fibres of it advance ſo far forward as to be connected with the fibrils of the firſt branch of the fifth pair of the head, and of the Portio Dura of the Auditory Nerve.

The SECOND CERVICAL is ſoon joined by ſome branches to the ninth of the head and intercoſtal, and to the firſt and third of the neck; then has a large branch that comes out at the exterior edge of the Sterno-maſtoideus Muſcle, where it joins with the Acceſſorius of the eighth pair; and is afterwards diſtributed to the Platyſma Myoides, teguments of the ſide of the neck and head, Parotid Gland, and external ear, being connected to the Portio Dura of the Auditory nerve, and to the firſt Cervical. The remainder of this ſecond Cervical is ſpent on the Levator Scapulæ and the extenſors of the neck and head. Generally a large branch is here ſent off to join the Acceſſorius of the eighth pair, near the ſuperior angle of the Scapula.

In opening the external Jugular Vein, no operator can promiſe not to touch ſome of the cutaneous branches of this nerve with the lancet; which occaſions a ſharp pricking pain in the mean time, and a numbneſs of the ſkin near the orifice for ſome time after.

The THIRD PAIR of the neck paſſes out between the third and fourth Cervical Vertebræ; having immediately a communication with the ſecond, and ſending down a branch, which being joined by a branch from the fourth Cervical, forms the PHRENIC Nerve. This deſcending enters the Thorax between the Subclavian Vein and Artery; and then being received into a groove formed for it in the Pericardium, it has its courſe along this Capſula of the heart, till it is loſt in the middle part of the Diaphragm. The right Phrenic has a ſtreight courſe; but the left one is obliged to make a conſiderable turn outwards to go over the prominent part of the Pericardium, where the point of the heart is lodged. The middle of the Diaphragm ſcarce could have been ſupplied by any other nerve which could have had ſuch a ſtraight courſe as the Phrenic has.

The other branches of the third Cervical Nerve are diſtributed to the muſcles and teguments at the lower part of the neck and top of the ſhoulder. No wonder then that an inflammation of the liver or ſpleen, an abſceſs in the lungs adhering to the Diaphragm, or any other cauſe capable of irritating the Diaphragm, ſhould be attended with a ſharp pain on the top of the ſhoulder as well as wounds, ulcers, *&c.* of this muſcle itſelf.—— If the irritation of this muſcle is very violent, it may occaſion that convulſive contraction of the Diaphragm which is called an Hiccough; and therefore an Hiccough in an inflammation of the liver has been juſtly declared to be an ill ſymptom.

An irritation of the Thoracic nerves which produces ſneezing, may ſometimes free the Phrenic nerves from any ſpaſm they occaſion; ſo that ſneezing ſometimes takes away the Hiccough; and a derivation of the fluid of the nerves any other way may do the ſame thing: Or, the Hiccough may alſo be ſometimes cured, by drawing up into the noſe the ſmoak of burning paper or other acrid fumes, ſwallowing pungent or aromatic medicines, and by a ſurprize, or any other ſtrong application of the mind in thinking, or in diſtinguiſhing objects: Or, when all theſe have failed, it has been put away by the briſk Stimulus of a bliſtering plaiſter applied to the back.

The FOURTH CERVICAL Nerve, after ſending off that branch which joins with the third to form the Phrenic, and beſtowing twigs on the muſcles and glands of the neck, runs to the arm-pit, where it meets with the FIFTH, SIXTH, and SEVENTH Cervicals, and FIRST DORSAL, that eſcape in the interſtices of the Muſculi Scaleni, to come at the arm pit, where they join, ſeparate, and rejoin, in a way ſcarce to be rightly expreſſed in words; and after giving ſeveral conſiderable nerves to the muſcles and teguments which cover the Thorax, they divide into ſeveral branches, to be diſtributed to all the parts of the ſuperior extremity. Seven of theſe branches we ſhall deſcribe under particular names.

### Nervus Scapularis

The Scapularis runs ſtreight to the Cavitas Semilunata of the upper Coſta of the Scapula, which is a hole in the recent ſubject by a ligament being extended from one angle of the bone to the other, giving nerves in its way to the muſcles of the Scapula. When it has paſſed this hole, it ſupplies the Supra Spinatus muſcle; and then deſcending at the anterior root of the Spine of the Scapula, it is loſt in the other muſcles that lie on the Dorſum of that bone.

### NERVUS ARTICULARIS.

The Articularis ſinks downwards at the Axilla, to get below the neck of the head of the Os Humeri, and to mount again at the back part of it; ſo that it almoſt ſurrounds the articulation, and is diſtributed to the muſcles that draw the arm back, and to thoſe that raiſe it up.

### NERVUS CUTANEUS.

The Cutaneus runs down the fore-part of the arm near the ſkin, to which it gives off branches; and then divides on the inſide of the fore-arm into ſeveral nerves, which ſupply the teguments there, and on the palm of the hand. —In opening the Baſilic Vein of the arm, at the ordinary place, the ſame ſymptoms are ſometimes produced as in opening the external Jugular Vein, and from a like cauſe, to wit, from hurting a branch of this Cutaneous Nerve with the lancet.

### NERVUS MUSCULO-CUTANEUS.

The Muſculo-Cutaneus, or Perforans Caſſeri, paſſes through the Coraco Brachialis Muſcle; and, after ſupplying the Biceps Flexor Cubiti and Brachiæus Internus, paſſes behind the tendon of the Biceps, and over the Cephalic Vein, to be beſtowed on the teguments on the outſide of the fore-arm and back of the hand.—This nerve is ſometimes hurt in opening the Cephalic Vein, and cauſes pain and numbneſs for a ſhort time.

### NERVUS MUSCULARIS.

The Muſcularis has a ſpiral courſe from the Axilla, under the Os Humeri, and backward to the external part of that bone, ſupplying by the way the Extenſor Muſcles of the fore-arm to which it runs between the two Brachiæi Muſcles and within the Supinator Radii Longus.—At the upper-part of the fore-arm, it ſends off a branch, which accompanies the Supinator Longus till it comes near the wriſt, where it paſſes obliquely over the Radius, to be loſt in the back of the hand and fingers.—The principal part of this nerve pierces through the Supinator Radii Brevis, to ſerve the muſcles that extend the hand and fingers, whoſe actions are not injured when the Supinator acts.

### Nervus Ulnaris.

The Ulnaris is extended along the inſide of the arm, to give nerves to the muſcles that extend the fore-arm and to the teguments of the elbow: Towards the lower part of the arm, it ſlants a little backward to come at the groove behind the internal Condyle of the Os Humeri, through which it runs to the Ulna: In its courſe along this bone, it ſerves the neighbouring muſcles and teguments; and as it comes near the wriſt, it detaches a branch obliquely over the Ulna to the back of the hand, to be loſt in the convex part of ſeveral fingers. The larger part of the nerve goes ſtreight forward to the internal ſide of the Os Piſiforme of the wriſt; where it ſends off a branch which ſinks under the large tendons in the palm, to go croſs to the other ſide of the wriſt, ſerving the Muſculi Lumbricales and Interoſſei, and at laſt terminating in the ſhort muſcles of the thumb and fore-finger. What remains of the Ulnar nerve after ſupplying the ſhort muſcles of the little-finger, divides into three branches; whereof two are extended along the ſides of the ſheath of the tendons of the flexors of the little-finger, to furniſh the concave ſide of that finger; and the third branch is diſpoſed in the ſame way upon the ſide of the ring-finger next to the little-finger.

### Nervus Radialis.

The Radialis accompanies the humeral artery to the bending of the elbow, ſerving the flexors of the cubit in its way; then paſſing through the Pronator Radii Teres muſcle, it gives nerves to the muſcles on the fore-part of the fore-arm and continues its courſe near to the Radius, beſtowing branches on the circumjacent muſcles. Near the wriſt, it ſometimes gives off a nerve which is diſtributed to the back of the hand, and the convex part of the thumb and ſeveral of the fingers, inſtead of the branch of the muſcular. The larger part of this nerve, paſſing behind the annular ligament of the wriſt, gives nerves to the ſhort muſcles of the thumb; and afterwards ſends a branch along each ſide of the ſheath of the tendons of the flexors of the thumb, fore-finger, middle-finger, and one branch to the ſide of the ring-finger, next to the middle one, to be loſt on the concave ſide of thoſe fingers.

Though the Radial nerve paſſes through the Pronator muſcle, and the Muſcular nerve ſeems to be ſtill more unfavourably placed within the Supinator Brevis; yet the action of theſe muſcles don't ſeem to have any effect in hindering the influence of theſe nerves; for the fingers or hand can be bended while pronation is performing vigorouſly, and they can be extended while ſupination is exerciſed.

The manner of the going off of theſe nerves of the fingers, both from the Ulnar and Radial, is, that a ſingle branch is ſent from the trunk to the ſide of the thumb and little-finger, fartheſt from the other fingers; and all the reſt are ſupplied by a trunk of a nerve, which ſplits into two ſome way before it comes as far as the end of the Metacarpus, to run along the ſides of different fingers that are neareſt to each other.

It might have been obſerved, that, in deſcribing the poſterior branches of the Ulnar and Muſcular Nerves, we did not mention the particular fingers, to the convex part of which they are diſtributed. Our reaſon for this omiſſion is, the uncertainty of their diſtribution; for though ſometimes theſe poſterior branches go to the ſame fingers, to the concave part of which the anterior branches of the Ulnar and Radial are ſent, yet frequently they are diſtributed otherwiſe.

The TWELVE DORSAL nerves of each ſide, as ſoon as they eſcape from between the Vertebræ, ſend a branch forward to join the intercoſtal, by which a communication is made among them all; and they ſoon likewiſe give branches backwards to the muſcles that riſe the trunk of the body, their principal trunk being extended outwards to come at the ſurrow in the lower edge of each rib, in which they run toward the anterior part of the Thorax, between the internal and external intercoſtal muſcles, giving off branches in their courſe to the muſcles and teguments of the Thorax.

The FIRST Dorſal, as was already obſerved, is particular in this, that it contributes to form the brachial nerves; and that the two branches of the intercoſtal, which come down to the Thorax, form a conſiderable ganglion with it.

The SIX lower Dorſal nerves give branches to the Diaphragm and abdominal muſcles.

The TWELFTH joins with the firſt Lumbar, and beſtows nerves on the Muſculus Quadratus Lumborum and Iliacus Internus.

As the intercoſtal is larger in the Thorax than any where elſe, and ſeems to diminiſh gradually as it aſcends and deſcends, there is cauſe to ſuſpect that this is the trunk from which the ſuperior and inferior pairs are ſent as branches.

The FIVE LUMBAR nerves on each ſide communicate with the intercoſtal and with each other, and give branches backwards to the loins.

The FIRST communicates with the laſt Dorſal, ſends branches to the abdominal muſcles, to the Pſoas and Iliacus, and to the teguments and muſcles on the fore-part of the thigh; while its principal branch joins with the other nerves to form the Crural nerve.

The SECOND LUMBAR nerve paſſes through the Pſoas Muſcle, and is diſtributed nearly in the ſame way as the former: As is alſo the THIRD.

Branches of the ſecond, third, and fourth, make up one trunk, which runs along the fore-part of the Pelvis; and paſſing in the notch at the fore-part of the great hole common to the Os Pubis and Iſchium, is ſpent on the adductor muſcles, and on the teguments on the inſide of the thigh. This nerve is called the OBTURATOR or POSTERIOR CRURAL NERVE.

By united branches from the firſt, ſecond, third, and fourth lumbar nerves, a nerve is formed, that runs along the Pſoas Muſcle, to eſcape with the external Iliac veſſels out of the Abdomen, below the tendinous arcade of the external oblique muſcle. This nerve, which is named the ANTERIOR CRURAL, is diſtributed principally to the muſcles and teguments on the fore-part of the thigh. A branch, however, of this nerve runs down the inſide of the leg to the upper part of the foot, keeping near to the Vena Saphæna; in opening of which with a lancet at the ancle, the nerve is ſometimes hurt, and occaſions ſharp pain at the time of the operation, and numbneſs afterwards.

The remainder of the Fourth Lumbar and the fifth join in compoſing the largeſt nerve of the body; which is ſoon to be deſcribed.

Whoever attends to the courſe of theſe lumbar nerves, and of the ſpermatic veſſels and nerves upon the Pſoas muſcle, with the oblique paſſage of the Ureter over that muſcle, will not be ſurpriſed, that when a ſtone is paſſing in this canal, or even when it is inflamed, the trunk of the body cannot be raiſed erect, without great pain; or that the ſkin of the thigh becomes leſs ſenſible, and the thigh is drawn forward, and that the teſticle often ſwells and is drawn convulſively towards the ring of the Abdominal muſcles.

The Sixth Pair of the falſe VERTEBRÆ conſiſt each of ſmall poſterior branches ſent to the hips, and of large anterior branches.

### NERVUS SCIATICUS.

The firſt, ſecond, and third, after coming through the three upper holes in the fore part of the Os Sacrum, join together with the fourth and fifth of the loins, to form the largeſt nerve of the body, which is well known by the name of Sciatic or Iſchiatic Nerve: This, after ſending large nerves to the different parts of the Pelvis, and to the external parts of generation and the Podex, as alſo to the muſcles of the hips, paſſes behind the great tuber of the Os Iſchium, and then over the quadrigemini muſcles to run down near to the bone of the thigh at its back-part, giving off nerves to the neighbouring muſcles and teguments. Some way above the ham, where it has the name of the Poplitæus Nerve, it ſends off a large branch that paſſes over the Fibula, and ſinking in among the muſcles on the anterior external part of the leg, runs down to the foot, to be loſt in the upper part of the larger toes, ſupplying the neighbouring muſcles and teguments every where in its paſſage.

The larger branch of the Sciatic, after giving branches to the muſcles and teguments about the ham and knee, and ſending a large cutaneous nerve down the calf of the leg, to be loſt at laſt on the outſide of the foot and upper part of the leſſer toes, ſinks below the Gemellus muſcle, and diſtributes nerves to the muſcles on the back of the leg; among which it continues its courſe, till paſſing behind the internal Malleolus, and in the internal hollow of the Os Calcis, it divides into the two Plantar nerves: The internal of which is diſtributed to the toes in the ſame manner that the radial nerve of the hand ſerves the concave ſide of the thumb, and fingers; and the external Plantar is divided and diſtributed to the ſole of the foot and toes, nearly as the Ulnar nerve is in the palm of the hand, and in the concave part of the fingers.

Several branches of theſe nerves, that ſerve the inferior extremities, pierce through muſcles.

The FOURTH, which, with the two following, is much ſmaller than the three ſuperior, ſoon is loſt, in the Veſica Urinaria and Inteſtinum Rectum.

The FIFTH comes forward between the extremities of the Os Sacrum and Coccygis, to be diſtributed principally to the Levatores Ani.

The SIXTH, which ſome think to be only a production of the Dura Mater, advances forward below the broad ſhoulders of the firſt bone of the Os Coccygis, and is loſt in the Sphincter Ani and teguments covering it.

The branches of the four laſt Cervical nerves, and of the firſt Dorſal, which are beſtowed on the ſuperior extremities, and the two Crurals, with the Sciatic, which are diſtributed to the inferior extremities, are much larger proportionally to the parts they ſerve, than the nerves of the trunk of the body, and eſpecially of the Viſcera, are; and for a very good reaſon, that in the moſt common neceſſary actions of life, a ſufficient quantity of the nervous influence may be ſupplied to the muſcles there, which are obliged to perform more frequent and violent contractions than any other parts do.

The ſize of the nerves of the inferior extremities ſeems larger proportionally than in the ſuperior extremities; the inferior extremities having the weight of the whole body to ſuſtain, and that frequently at a great diſadvantage.

What the effect is of the nerves here being injured, we ſee daily, when people happen, by ſitting wrong, to compreſs the Sciatic nerve, they are incapable for ſome time after to ſupport themſelves on the affected extremity: And this is ſtill more remarkable in the Sciatic or hip-gout, in which the member is not only weakened, but gradually ſhrivels and waſtes.

*F I N I S.*